34th Year JUNE, 1950

RUBBER AGE

FOR
SUPER AGING STOCKS

VANDEX
TUADS
AND
TELLOY

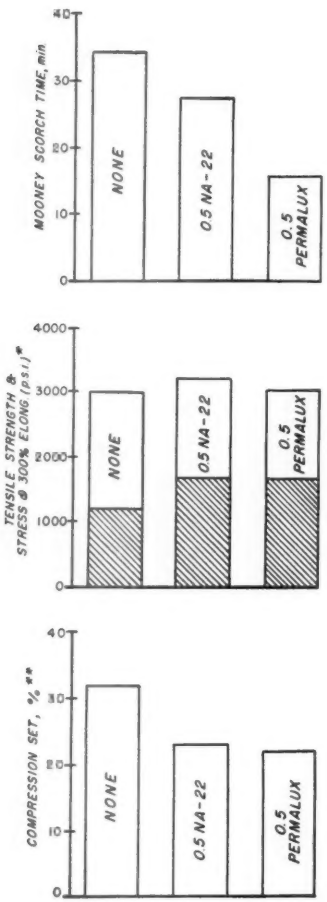
FOR USE IN SULFURLESS COMPOUNDS
WHERE HEAT-AGE IS A MUST.

R. T. VANDERBILT CO. INC.
230 Park Avenue, New York 17, N. Y.

TEST RECIPE

Neoprene Type GN	100.0
NEOZONE A	2.0
Stearic Acid	0.5
Extra Light Calcined Magnesia	4.0
SRF Carbon Black	29.0
Zinc Oxide	5.0

Acceleration as Shown



*Specimens cured 10 min (a) 307° F.

**Specimens cured 40 min. (a) 307° F

Set determined at 30% constant deflection in accordance with ASTM D 395.

You'll get all these important advantages with Du Pont NA-22

A new accelerator for neoprene

Although Du Pont NA-22 was originally developed as an accelerator for Neoprene Type W, it has since proved an outstanding accelerator for these other types: GN, GN-A, RT and FR. With NA-22, you'll benefit from important advantages not obtainable with other neoprene accelerators.

PROCESSING SAFETY. Consider the data in the graphs shown here. Based on Mooney scorch time, the Neoprene Type GN stock accelerated with NA-22 is much safer than the stock accelerated with Permalux—long considered the best all-round neoprene accelerator.

FAST TIGHT CURES. The modulus and compression set data in the graphs clearly show that the NA-22 compound attains a high state of cure as rapidly as the Permalux accelerated stock.

NO STAINING OR DISCOLORATION. NA-22 *does not* contribute to darkening during cure, to discoloration on exposure to light, or to staining of such organic finishes as Duco or Dulux.

ECONOMY. NA-22 is more economical to use than other neoprene accelerators. For example, in most Neoprene Type W stocks, it is possible to replace Permalux with only half as much NA-22 and still attain the same rate and state of cure.

For More Information. *Consult our recent report 50-1, entitled "NA-22, An Accelerator for Neoprene." Extra copies are available. Ask your Du Pont representative or write:*

RUBBER CHEMICALS DIVISION
E. I. DU PONT DE NEMOURS & COMPANY, (INC.)
WILMINGTON 93, DELAWARE

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BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

THE RUBBER AGE, published monthly by The Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York 19, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscription in United States, $3.00 a year; Canada, $3.50; Foreign, $4.00. June, 1950, Vol. 67, No. 3.

now's the time to begin thinking about **SCORCH** problems

the answer is Good-rite VULTROL!

BE ready for hot weather *before* it hits! Be ready with Good-rite Vultrol to protect your tire tread processing against scorching. For this *proved* rubber chemical is *doubly* valuable during hot weather months when scorch problems are at their worst.

Good-rite Vultrol has *extra* advantages. It retards scorch without loss in quality at optimum cure. Many anti-scorch agents retard cure at all temperatures. But Vultrol retards cure at processing temperatures only, and actually activates slightly at curing temperatures. And Vultrol is especially valuable as a means of recovering partially-scorched stocks.

Vultrol is used successfully with natural rubber, GR-S and nitrile rubbers. Reinforcing furnace black tread stocks can be safely processed with it the year 'round. It is economical and easy to use. Send for complete information about the properties of this stock-saving, money-saving rubber chemical. Please address Dept. CA-3, B. F. Goodrich Chemical Company, Rose Bldg., Cleveland 15, Ohio.

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GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers

Philblack* O *gives extra wear*

Resists abrasion, cut and tear!

Everybody loves Philblack O! And for many reasons! Most important, of course, is the ability of Philblack O to impart to its compounds extremely high abrasion resistance and exceptionally long flex life. Philblack O incorporates rapidly with excellent dispersion to yield stocks with improved denseness and smooth extrusion characteristics. For long-wearing, low-cost rubber compounds, specify Philblack O. You'll save money . . . you'll get a long-wearing compound in the bargain!

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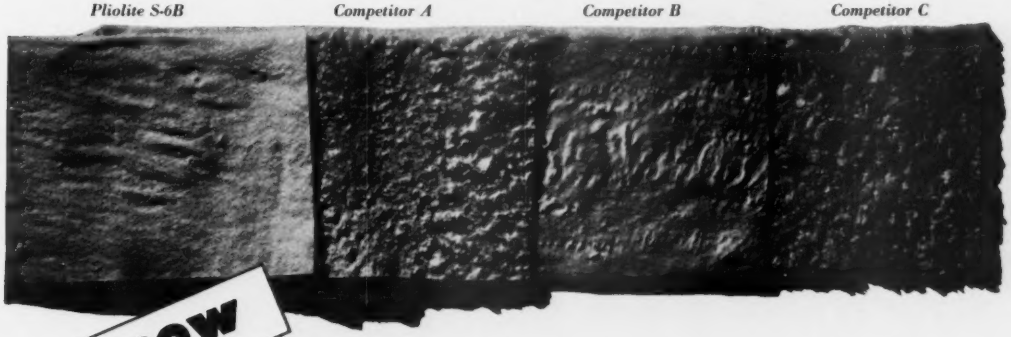
*A Trademark

Superior dispersion characteristics of **Pliolite S-6B,** compared with three competitive resins. All samples were processed under identical techniques so established as to give "marginal mixing conditions." Such conditions approximate the absolute minimum required in production equipment for acceptable dispersion of any reinforcing resin. See for yourself, the exceptional dispersion characteristics of **Pliolite S-6B** as evidenced by the smooth-textured sheet and the minimum of undispersed resin particles.

Pliolite S-6B *Competitor A* *Competitor B* *Competitor C*



now for Shoe Soles

A reinforcing resin that's *truly* easy to process

PLIOLITE S-6B

YOU'VE probably heard about the interesting paper, delivered by Goodyear's rubber chemists before the April meeting of the Division of Rubber Chemistry of the American Chemical Society, concerning "easy processing" reinforcing resins. Well, here's the resin that resulted from their study—**Pliolite S-6B**—a truly easy processing resin. **Pliolite S-6B** has been thoroughly tested in laboratory and trial plant runs—already has been "use-proved" in full scale production by independent sole manufacturers.

Just look at the actual test samples pictured above. Note the poor dispersion indicated by rough irregular sheets and presence of undispersed resin particles in samples "A", "B" and "C." Then compare with the **Pliolite S-6B** sample showing smooth texture and readily apparent, complete dispersion and compatibility—*definite proof that* ***Pliolite S-6B*** *leads in easy processibility.*

In addition to easier processing, **Pliolite S-6B** will give you lighter color, high hardness and greater flex-life than most competitive resins in shoe sole stocks. What's more you can replace the present resin in your formulations, part for part, with **Pliolite S-6B** with perfect confidence and gratifying results. There's no need for lengthy evaluations of this new resin.

Ask us today for full details and samples of **Pliolite S-6B** the new, easier processing reinforcing resin for your shoe soles, wire insulation, flooring or molded items.

Write to: **GOODYEAR, CHEMICAL DIVISION**
AKRON 16, OHIO

USE PROVED *Products*

GOODYEAR

Pliolite—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Here's why Wyandotte Precipitated Calcium Carbonate has a new name

"Wyandotte Precipitated Calcium Carbonate." That's almost a tongue-twister. We've felt for some time that it was a handicap for a really good product. So we've been looking for a shorter name.

We settled on "Purecal"* because it does a fair job of describing the exceptional qualities of Wyandotte's Precipitated Calcium Carbonate.

Wyandotte Purecal, the purest Calcium Carbonate in the world, is produced by the reaction of crystal-clear solutions of calcium chloride and sodium carbonate. Control of this reaction makes it possible to produce a precipitate of a given particle size.

Wyandotte Purecal improves the tensile strength and tear resistance of rubber products. It imparts excellent flex-life. It permits the production of finished articles of any color.

Would you like to know more about Wyandotte Purecal? Write us. We'll send you full facts without obligation.

*Trade-mark

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Wyandotte, Mich. • *Offices in Principal Cities*

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CALCIUM CARBONATE • CALCIUM CHLORIDE
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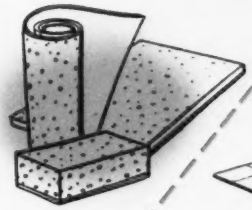
Marvinol-based calendered sheets have superior "dry hand" . . . are easily worked . . . have high stitch-tear resistance.

Cast, calendered or extruded Marvinol-based films have high tear strength . . . are easily processed, printed, embossed, sewn or heat-sealed.

Marvinol pays off with faster extrusion rates . . . makes end products with high resistance to cut-through, good electrical qualities.

Adaptable to injection, low pressure, compression, slush and blow molding, Marvinol gives strong, durable products with sharp detail.

Marvinol is being used in new vinyl compositions to make tough, lightweight cellular products.



Colorful, durable, high-style floor coverings are processed from high molecular weight Marvinol formulations.

FOR SUPERIOR physicals, Marvinol VR-10. For ease in processing, plus good physicals, Marvinol VR-20. Now both Marvinol resins give processors the characteristics that make sales. Stability under heat, light and time; dimensional stability; low temperature flexibility; resistance to wear, tear, oils and acids.

Let us show you how to utilize these extras in Marvinol. All technical information developed in our modern laboratories is at your disposal since it is through you that Marvinol-based products reach the consumer. Write today for the latest technical information. Dept. R-6, NAUGATUCK CHEMICAL, Naugatuck, Connecticut. *In Canada*, Naugatuck Chemical, Elmira, Ontario.

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SA 57-1 — Powder form, treated with 3% mineral oil to reduce dusting and improve dispersibility in mill-mixed stocks.

SA 57-9 — Xtruded form. Treated with inert rubber-soluble binder. Free flowing, dustless, with improved dispersibility due to fine particle size of coated product.

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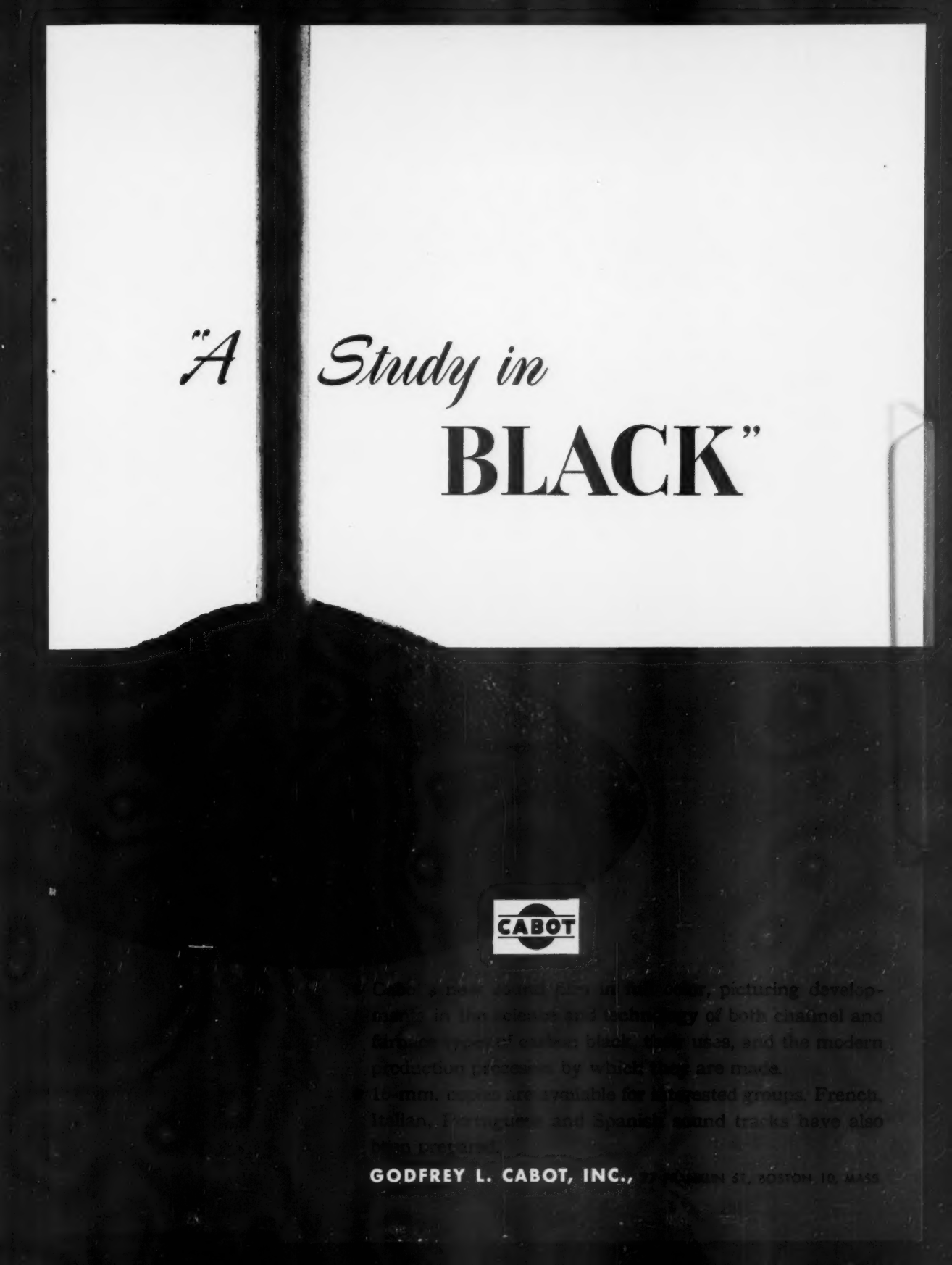
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BLACK"
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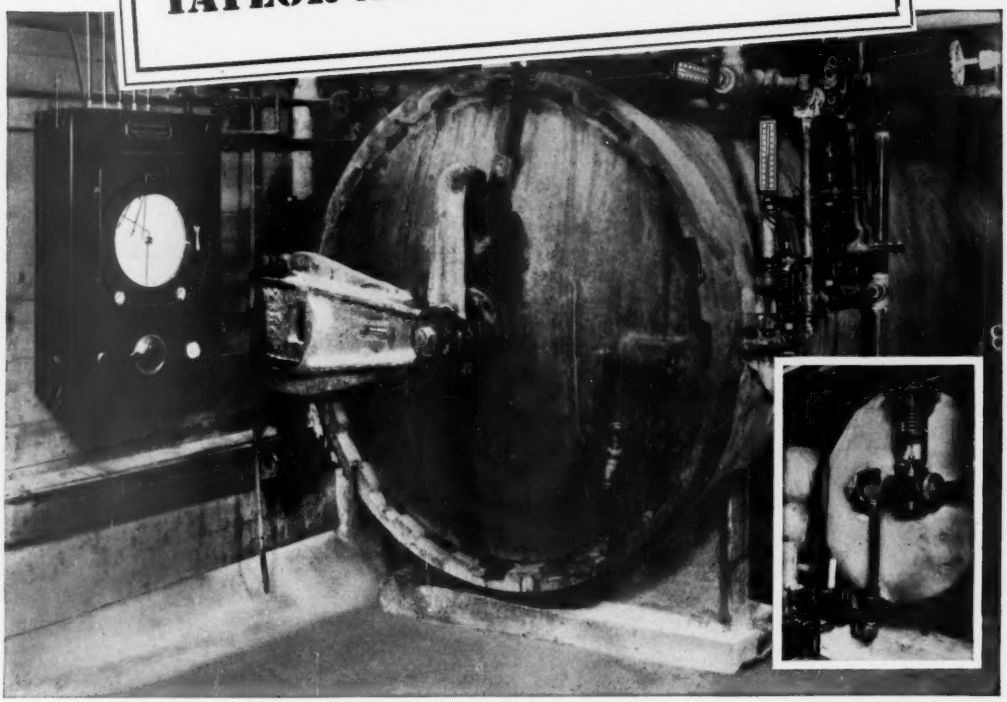
ANOTHER VULCANIZING PROBLEM SOLVED BY TAYLOR AUTOMATIC CONTROL



"CONSISTENTLY uniform product—fewer rejects," that's what happened at the Chardon Rubber Company of Chardon, Ohio.

Recently this well-known manufacturer of mechanical rubber goods wanted better circulation of steam through a horizontal vulcanizer (above). Taylor's answer was a foolproof control system run by a Fulscope* Double Duty Temperature Controller with Process Timer. It gives complete steam circulation by impinging steam on the curved surface of the door. No steam can be admitted until door is closed—an important safety feature.

1 First, operator loads heater and closes door, actuating a pilot valve to let air flow to instrument panel, opening blow-down valve.

2 Operator sets Process Timer. *Vulcanizer is now under automatic control.* Air flows to steam control side of instrument. Steam enters heater through the 1" and 2" valves to reduce come-up time. Gasket is also pressurized through 1/2" valve. Blow-down valve vents air from heater and gradually closes by regulation of an adjustable orifice. When heater pressure reaches 15 lbs, pressure switch closes and energizes electro-pneumatic pilot valve, to close gasket pressure valve.

3 Timing of vulcanizing period doesn't start until vulcanizer is up to proper temperature. Process Timer starts and cure temperature is maintained by 1" valve.

4 At end of cure, air supply to controller is shut off by solenoid air valve. Blow-down valve opens to vent heater.

5 As door is opened, all air is shut off from panel.

Ask your Taylor Field Engineer how *you* can cut costs on vulcanizer control. Or write Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

*Reg. Trade Mark

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NEW!

MAT TRIMMING PRESS

PROVIDES AUTOMATIC CYCLE OF OPERATION

This Farrel-Birmingham, 125-ton capacity, 84" x 96" hydraulic press is designed for increased efficiency in trimming automobile mats of the currently used larger sizes.

The automatic, cyclical motion of the press platen and the two tables provides time for removal and placement of stock on one table while stock on the other table enters the press, is trimmed, and withdrawn. Press and tables are hydraulically operated by separate, electrically driven pumping units. Inching motion of any one unit is obtained by selector switch.

The tables, which operate on antifriction-bearing rollers, are surfaced with ground, hardened steel plates. Adjustable deceleration of table movement assures smooth, controlled action.

The reciprocating cylinder has radial ribs extending over the platen area to provide reinforcement against deflection. Other design advantages include an arrangement for quickly changing the knife setup, outside packing of all rams, adjustable guides on the moving platen, and safety controls to stop all motion.

Write, wire or telephone for further details of this new, efficient press.

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ANSONIA, CONNECTICUT
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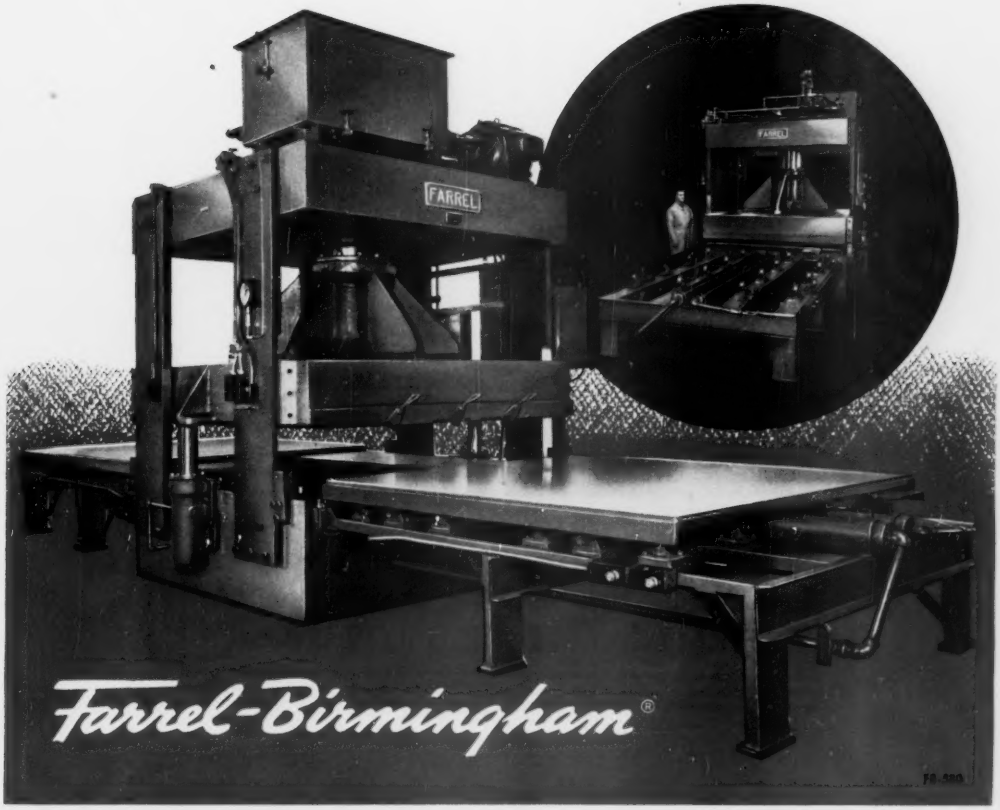

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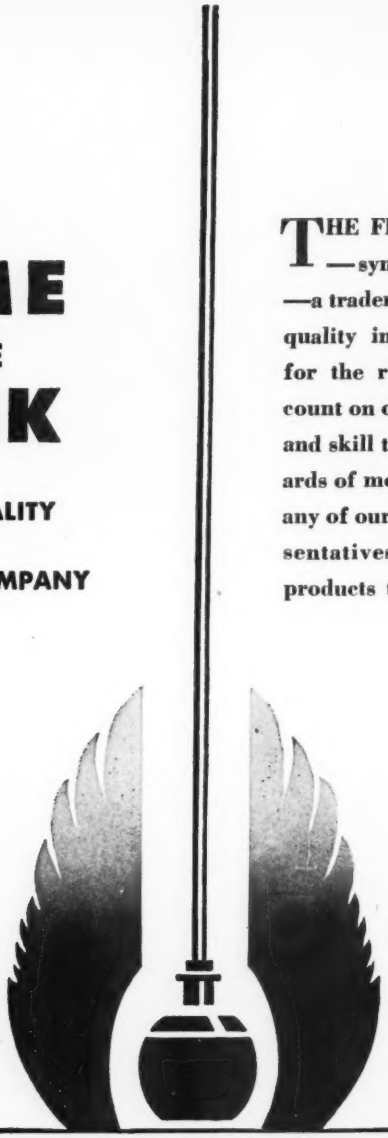

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Du Pont **"Alamask"** odorants
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Find out more! Send for the booklet "Odorants for the Rubber Industry"—or ask us for specific recommendations for your individual problems. Write—E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Department, Aromatics Section, Wilmington 98, Delaware. Branch Offices: Atlanta, Boston, Charlotte, Chicago, New York, Philadelphia, Providence, San Francisco.

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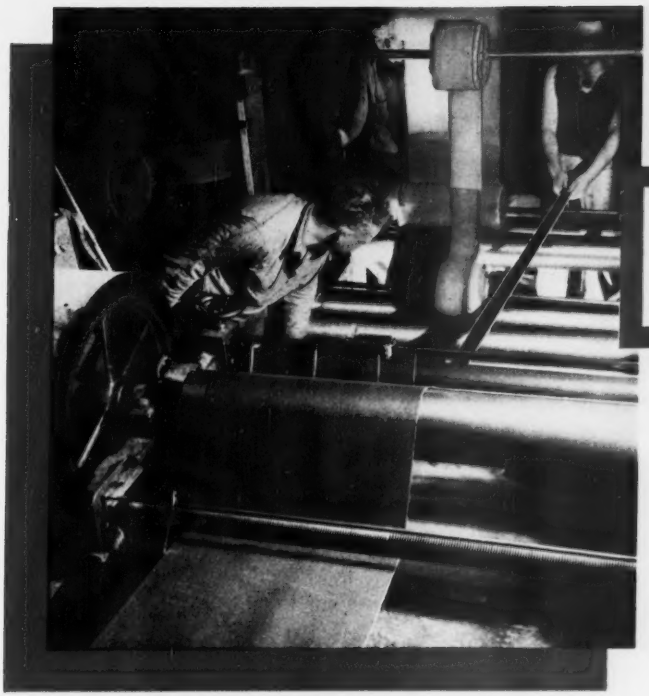

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The greater uniformity of Mt. Vernon fabrics means *consistent* quality in your finished products—smoother, more efficient fabrication.

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Mt. Vernon-Woodberry's staff of textile engineers is available on request to help you with your problems in development or application of industrial fabrics.

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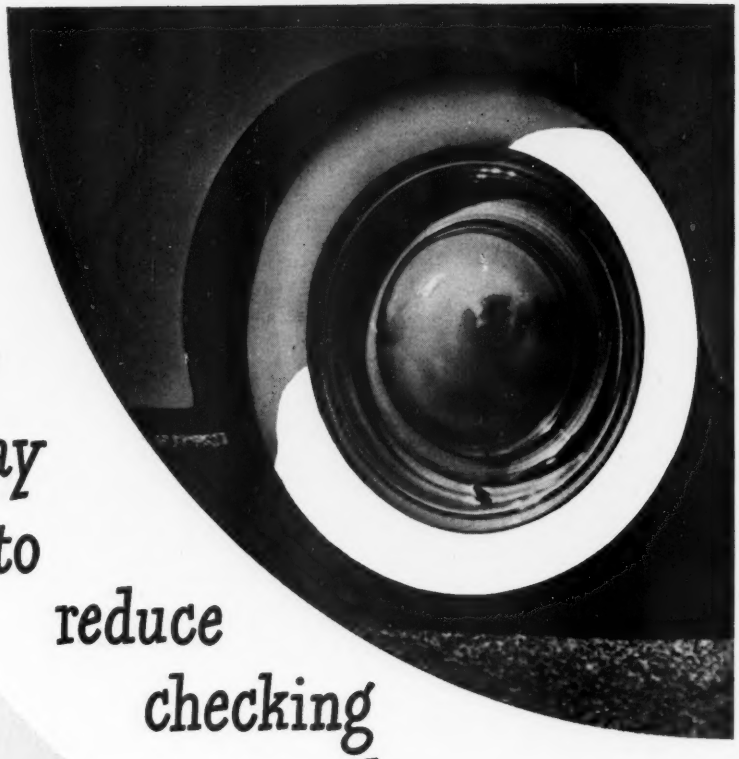

a new way to reduce checking and chalking

• Recent experimental work indicates that TITANOX-RA-NC—a "non-chalking" rutile titanium dioxide pigment—is effective for reducing, not only chalking, but also checking in white-wall tires.

As with all TITANOX pigments, TITANOX-RA-NC is remarkably compatible with rubber compounds and adds long-lasting whiteness and maximum brightness at minimum loading. Write today about your problems in pigmentation of white side wall compounds. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 South Michigan Avenue, Chicago 3, Ill.; 2600 South Eastern Avenue, Los Angeles 22, Calif. Branches in all other principal cities.

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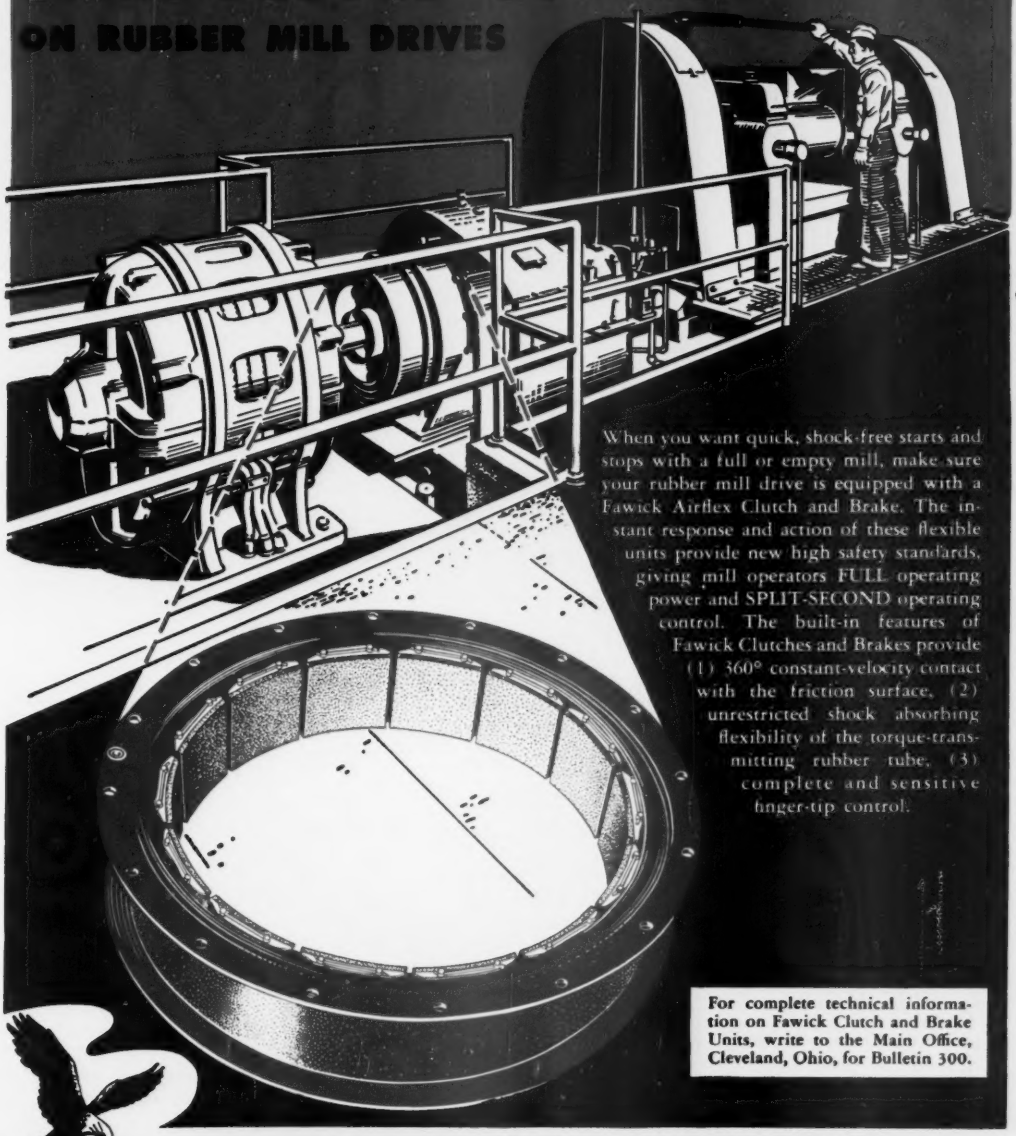
FAWICK CLUTCHES and BRAKES PROVIDE

SPLIT-SECOND CONTROL

ON RUBBER MILL DRIVES



When you want quick, shock-free starts and stops with a full or empty mill, make sure your rubber mill drive is equipped with a Fawick Airflex Clutch and Brake. The instant response and action of these flexible units provide new high safety standards, giving mill operators FULL operating power and SPLIT-SECOND operating control. The built-in features of Fawick Clutches and Brakes provide (1) 360° constant-velocity contact with the friction surface, (2) unrestricted shock absorbing flexibility of the torque-transmitting rubber tube, (3) complete and sensitive finger-tip control.

For complete technical information on Fawick Clutch and Brake Units, write to the Main Office, Cleveland, Ohio, for Bulletin 300.

FAWICK Airflex CO., INC.

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FAWICK CLUTCHES = AXIAL CONTACT + 360° RADIAL CONTACT + SHOCK ABSORPTION + CONTROLLED TORQUE = PEAK EFFICIENCY

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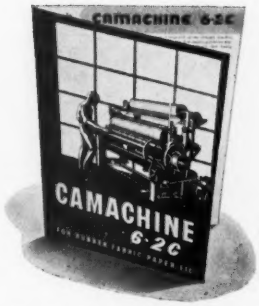
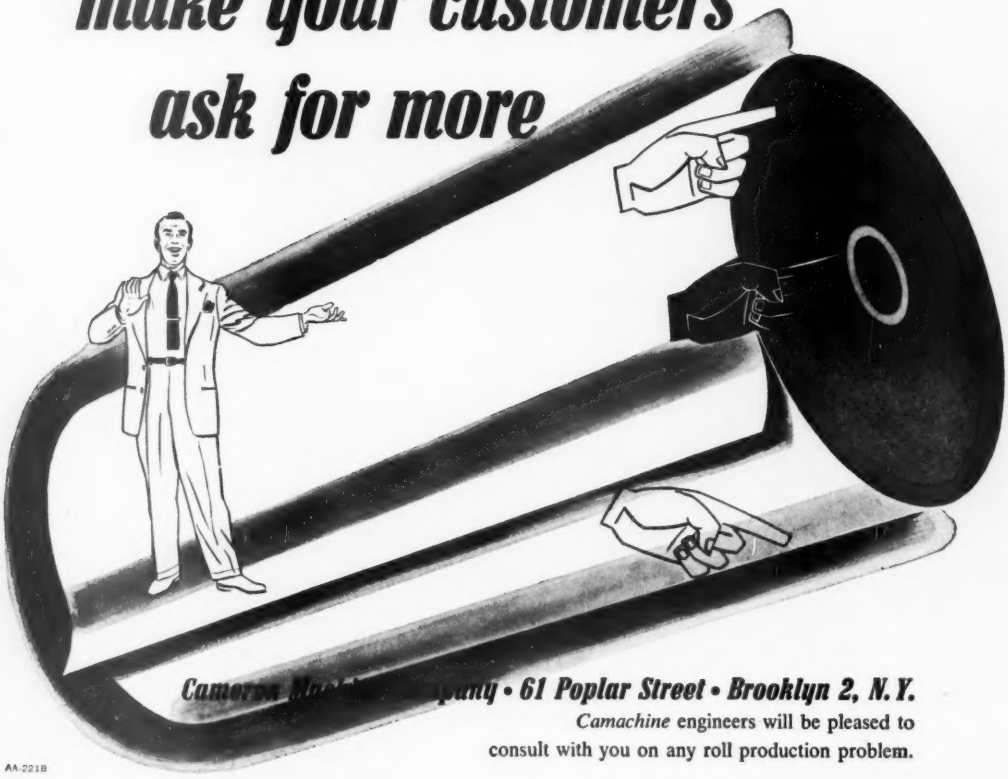


For fast production of top quality rolls of plain and friction-coated fabrics, proofed goods, natural and synthetic rubber goods, and similar materials, investigate the versatile, new *Camachine 6-2C*. Write for free illustrated bulletin.

make your customers ask for more



Cameron Machine Company • 61 Poplar Street • Brooklyn 2, N.Y.

Camachine engineers will be pleased to consult with you on any roll production problem.

AA-2218

It will pay you to get acquainted with this outstanding family of white

COLUMBIA PIGMENTS

These brief descriptions will serve as a guide to the characteristics you can obtain through the use of Columbia pigments in your rubber compounds.

Look into these pigments now. They may provide the answer to your specific problems. Working samples and Technical Bulletins on use are available upon request. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield, Pittsburgh 13, Pa.

	CALCENE T	SILENE EF	SILENE L	HI-SIL
Composition	Precipitated calcium carbonate with tall-oil coating	Precipitated hydrated calcium silicate	Precipitated hydrated calcium silicate with extremely low moisture content	Precipitated hydrated silicon dioxide
Specific Gravity	2.70	2.10	2.10	1.95
Particle Size (Avg.)	0.1 micron	.03 micron	.03 micron	.025 micron
Function	Low modulus. Good tensile strength, high hot tear resistance, and good abrasion. Excellent processing. Very slight activation of some accelerators. Smooth, fast extrusion.	High modulus. Good tensile, high tear and high abrasion especially in butadiene copolymers.	Partial stabilizer of the acid acceptor type for use in vinyl resins.	High modulus. High tensile and tear and extremely high abrasion resistance.
Suggested Application	Inner tubes, tire carcass stock, footwear, insulated wire and mechanical goods, vinyl garden hose, heels, drug sundries.	Soles, heels, wringer rolls, insecticides, printing inks, paints.	Vinyl film and hard vinyl compounds such as tiling, also as an anti-sintering agent in phenol formaldehyde moulding powders.	Super soling, white belting or any stock requiring good black properties but in a white or light color.

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- *OPERATE AT FULL LOADINGS*
- *SACRIFICE NO POWER*

Don't rob your cold-rubber tires of part of their quality by plasticizing with oils which contain absolutely NO rubber hydrocarbon value! Take a tip from the Buffalo and plasticize with rubber itself! Plasticize with BUFFALO R-575, the high quality black tire-tread reclaim that adds to, rather than detracts from the toughness and abrasive resistance of your product.

In addition you'll get fuller Banbury loadings, faster mixing, cooler tubing and, once again, be able to operate with normal use of power. R-575 is a reclaim of low Mooney plasticity and low specific gravity and once you experience the magic touch it can bring to your GR-S compounds, you'll never be without it. Let us tell you more about this new solution to a pressing problem. Drop us a line today for full details and samples.

U.S. RUBBER RECLAIMING COMPANY, INC.

P. O. BOX 365 • BUFFALO 5, N. Y.

68 years serving the industry solely as reclaimers

TRENTON, N. J. H. M. ROYAL, INC. 689 PENNINGTON AVE.

ANNOUNCING!

A NEW ZINC OXIDE *that can Speed Your Production, Step Up Your Quality, Cut Your Processing Costs*

PROTOX-167

This new pigment is the second in the modern Protox line of coated Zinc Oxides. You will find it is an all-purpose oxide for the activation and reinforcement of your many types of rubber products.

Protox-167 brings you all the well-known advantages of XX-4—the most-used brand of American Process Zinc Oxide—plus all the benefits of an exclusive patented* organic coating on its particles.

PROTOX-167 Gives You All These Advantages
(compared with Zinc Oxides not of the Protox type)

FEATURES OF PROTOX-167 ZINC OXIDE	HOW YOU PROFIT
Lowest Moisture Pickup	Faster mixing More uniform mixing
Lower Dry Bulking	Less storage space Larger batches More output
Minimum Dusting	Cleaner handling
Organophilic Surface of Particles	Quicker incorporation Better dispersion Less power consumption
Scorch Inhibition	More production
Plasticizing Effect	Faster, smoother tubing and calendering Reduces die swell Cuts calender shrinkage Gives cooler running stocks
Higher Reinforcement	Improved tensiles Better tear resistance Higher modulus Greater resilience
Minimum Progressive Cure Even With Persistent Accelerators	Longer service life

Why not make a commercial test now to check these characteristics in your compounds?

*U. S. Patent 2,385,380

THE NEW JERSEY ZINC COMPANY

Founded 1848

160 Front Street, New York 7, N. Y.

MR. CLIMCO SAYS...

A CLIMCO LINER *outwears several plain liners!*

Climco Liners last longer because of their non-sticking quality, increased tensile strength and lasting flexibility.

In addition to reducing fabric purchases, Climco Liners also cut production costs — because they separate perfectly from the stock, down-time due to stock adhesions is eliminated. Tackiness of the stock is preserved, gauges are more easily maintained and latitude in compounding is enlarged. There is no lint or ravelings with Climco Liners and they can be stored horizontally if desired.

Since 1922 Climco Processed Liners have proved their worth to the rubber industry. Give them a trial in your plant.

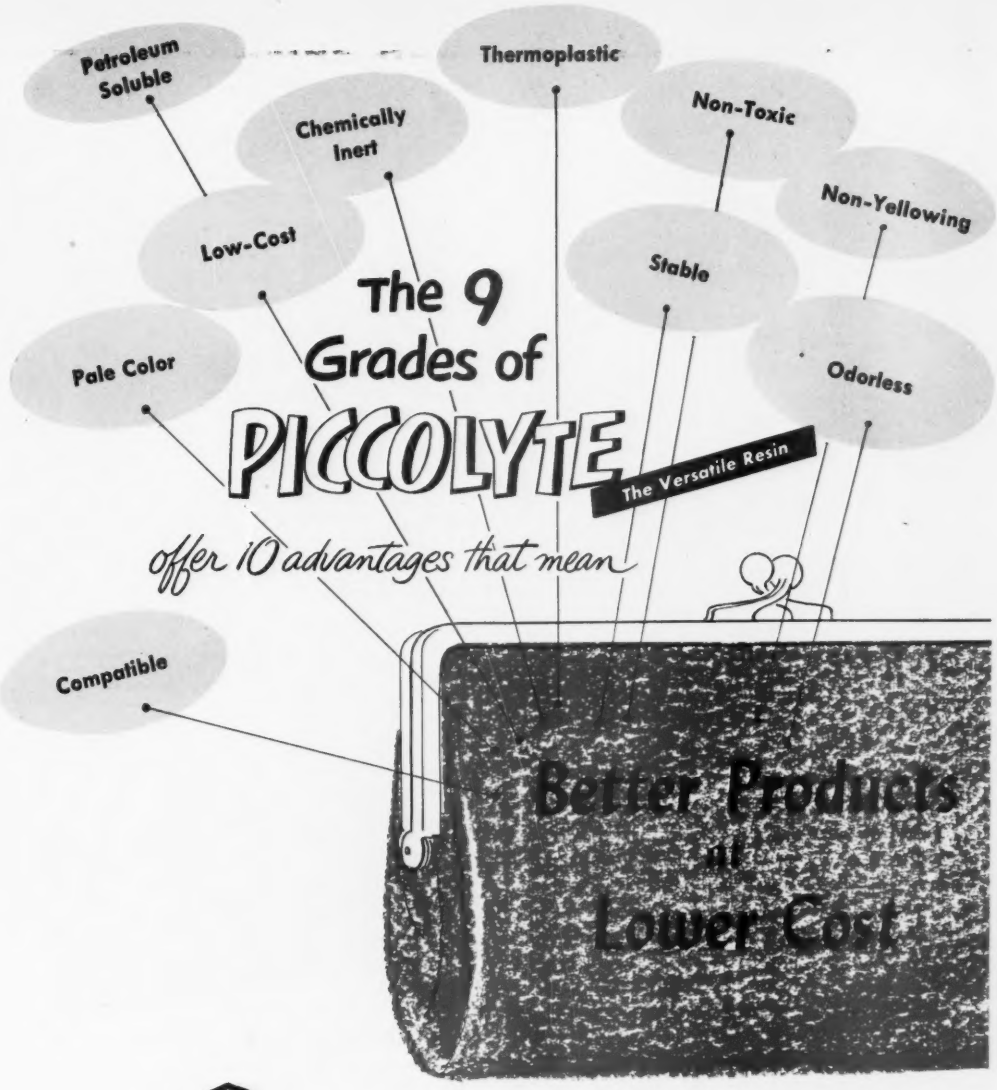
THE CLEVELAND LINER & MFG. CO.
5508 Maurice Avenue • Cleveland 4, Ohio, U. S. A.
Cable Address: "BLUELINER"

ILLUSTRATED LINER BOOKLET
Tells all about Climco Liners and Linerette and how to get better service from liners. Write for your copy now.

LINERETTE INTERLEAVING PAPER
Treatment Contains
NO OIL OR WAX
Samples on Request

CLIMCO
PROCESSED LINERS
Serving the Rubber Industry for 26 Years

CLIMCO CLIMCO



PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.

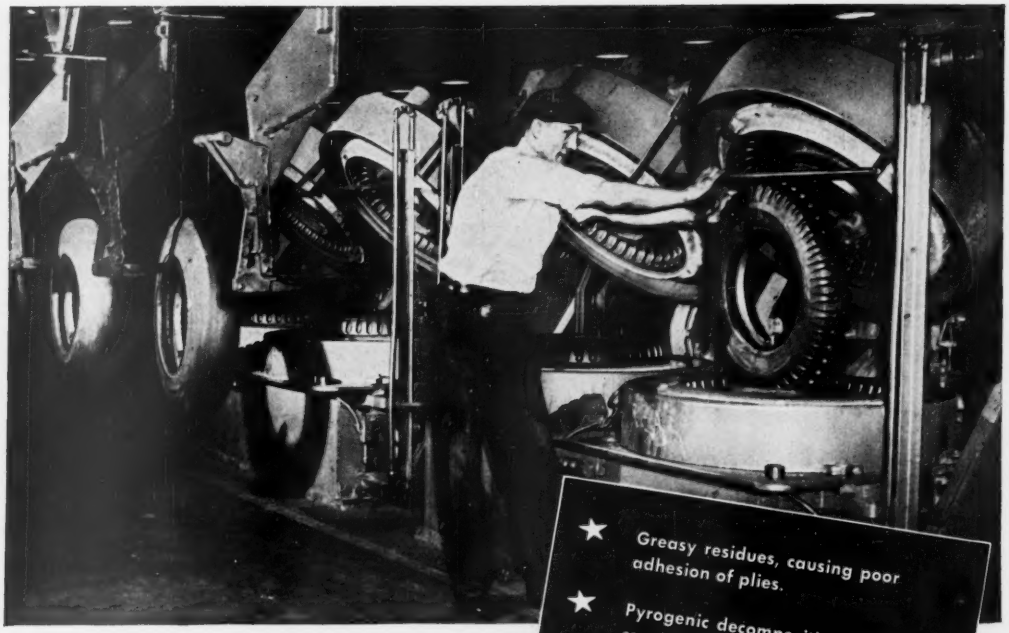
Clairton, Pennsylvania

Plants at Clairton, Pa.; West Elizabeth, Pa.; and Chester, Pa.
Distributed by Harwick Standard Chemical Co., Akron 5, Ohio

Piccolyte puts money in your pocketbook, because of the opportunities for cost-savings and product-improvement it provides.

Not only is Piccolyte low in cost, but it is soluble in low-cost petroleum solvents, thus presenting you with a double saving. It is pale in color and stable; it is chemically inert, non-toxic and compatible with other resins and ingredients.

We will be glad to send you full information on this remarkable synthetic resin, and free samples. Please state the nature of your application, so that we can send a suitable grade.



- Greasy residues, causing poor adhesion of plies.
- Pyrogenic decomposition products, causing bad odors.
- Fractional distillation, causing changes in drying time.
- Excessive volatiles, causing moisture condensation.
- Blistering, resulting from high boiling fractions.
- Health hazards, resulting from aromatic and chlorinated compounds.

Skellysolve helps reduce these Solvent Risks in Tire Production Operations!

"DOC" MacGEE SAYS:

Why run undue solvent risks in your tire production lines? With Skellysolve, you have a solvent that helps you make a *superior* product at *less* cost.

Check these outstanding Skellysolve qualities. It is composed essentially of saturated hydrocarbons. It has close boiling ranges and low end points. It is famous for its minimum of greasy residues. It is virtually free of unsaturates and sulphur compounds. It is sweet-smelling, pleasant to work with.

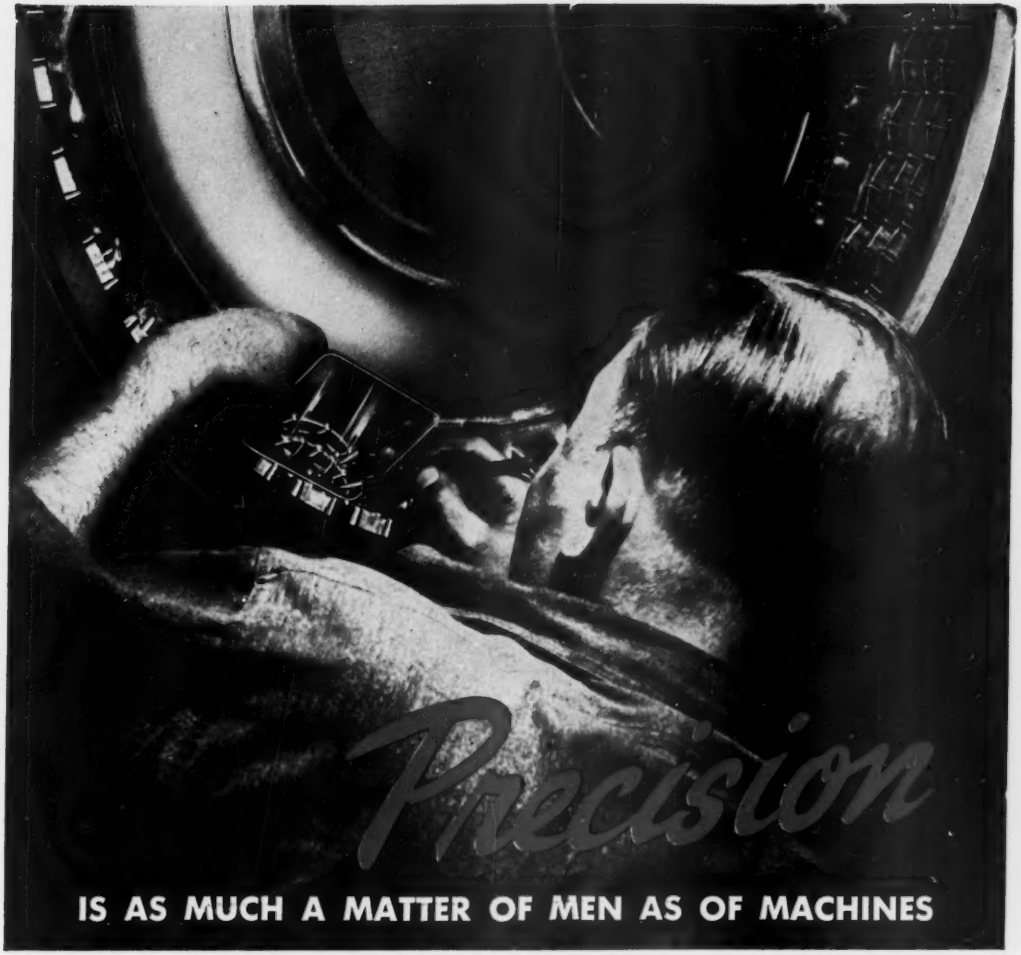
Too, Skellysolve is widely known for its prompt shipment and uniformity of quality. Skelly practically assures you an uninterrupted supply of Skellysolve!

If you have a solvent problem relating to rubber cements or rubber fabricating operations, Skellysolve may be your answer. Skelly's research laboratories and Skellysolve Technical Fieldmen may be able to help you. Get full particulars *now!*

Skellysolve

SOLVENTS DIVISION, SKELLY OIL COMPANY, KANSAS CITY, MO.

SKELLY



MUCH of the ability of BRIDGWATER to produce economically tire molds of whatever characteristics the industry requires is due to the many special machines we have designed and built.

But the mirror like finish, the sharp, precise corners, the accurate template fit to all characters and ribs in the design, characteristic of molds by BRIDGWATER, are as much a matter of men, as of machines.

Put the two together: special machines designed to perform specific functions quickly and accurately, plus craftsmen skilled by years, enthusiastic by nature, and conscientious by habit, and you have the basic reason why we believe tire molds by BRIDGWATER are unsurpassed anywhere in the world.

ATHENS MACHINE DIVISION

THE BRIDGWATER MACHINE COMPANY

Akron, Ohio

FOR BETTER MOLDS FOR BETTER TIRES *SPECIFY* BRIDGWATER

RECIPE

from the Barrett Rubber Research Laboratory

FOR

CUMAR*

RESIN, LIGHT EX GRADE,

in Natural Rubber

RECIPE

Smoked Sheets	100.00
"CUMAR" Resin, Light EX Grade	10.00
"Philblack" A	62.50
Calcium Carbonate (Precipitated)	50.00
"Silene" EF	25.00
Zinc Oxide	5.00
Stearic Acid	2.00
"Agerite" Alba	1.00
"Sunproof"	1.00
Sulfur	2.50
Benzothiazyl Disulfide	1.00
DOTG	0.25
Total	**260.25**

Specific Gravity	1.37
Rubber Hydrocarbon, % by Weight	38.5
Rubber Hydrocarbon, % by Volume	57.0
Mooney Viscosity, ML, 4 min. @ 212 F.	57.0
Scorch Test: Press Cures @ 250 F.	

Minutes	Cure
5	None
10	Slight
15	Fair

Press Cure at 316 F. (70 lb.)—10 Minutes:

Tension and Hardness Data	Unaged	Aged 24 Hrs. @ 100 C.
Stress, 300%, psi.	1500	1600
Tensile, psi.	1900	1700
Elongation, %	400	310
Hardness, Shore A	79	82
Tear-Resistance, Angle, lb./1-in. thickness	185	145

Press Cure at 316 F. (70 lb.)—15 Minutes:

Abrasion Resistance, du Pont cc. loss/ hp-hr.	275	300
Compression Set, 25% Constant Deflection, %	43	—
Resilience, Yerzley, 20% Deformation, %	44	33
Rebound, Goodyear-Healey, %	53.0	47.8
Contact Stain (24 hrs. @ 175 ±2 F.)	Slight	—
Migration Stain (24 hrs. @ 125 ±2 F.)	Slight	

To confer efficient and safe processibility, and to impart smooth and rapid calendering and extruding properties, "CUMAR" resin, light EX grade, is an exceptionally effective processing aid. It has found wide application in the compounding of natural rubber and synthetic elastomers.

Its reinforcing feature modifies the nerve of the rubber, minimizes shrinkage, and prevents sagging and flattening in open steam and air cures. Its extending character improves physical properties, and permits higher filler loading, thereby reducing compounding costs. The light EX grade of "CUMAR" resin is also extremely valuable for improving cut-growth resistance, and hot and cold tear-resistance.

In the design of automotive and aeronautical parts, mechanical and proofed goods, flooring, matting, bumper and channel stocks, and in items which are to be used in contact with dark-colored enamels and lacquers, "CUMAR" resin, light EX grade, promotes quality along with economy.

Barrett*

*Reg. U. S. Pat. Off.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

CARBON BLACKS

UNITED CARBON COMPANY, INC.

CHARLESTON 27, W. VA.

NEW YORK • AKRON • CHICAGO • BOSTON

DIXIE 20

Dixie 20 is a black with extensive applications in the rubber industry. Its world-wide approval by rubber technicians is fully warranted. Every skill was used to create in Dixie 20 the chemical purity, dependable uniformity, and the consistent rubber qualities expected of an SRF type. You cannot go wrong with Dixie 20. It is easier to stay in the lead when you have standardized on UNITED BLACKS.

DIXIE BRAND

RESEARCH DIVISION

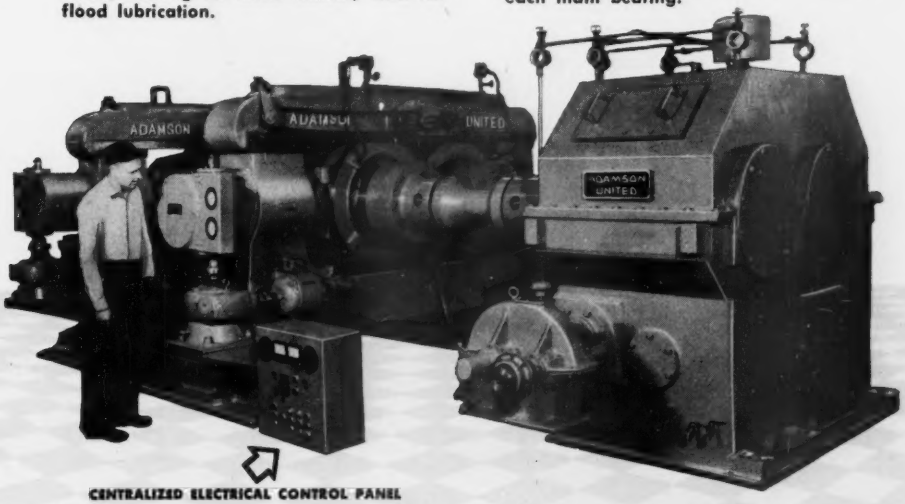
UNITED CARBON COMPANY, INC.

Charleston 27, West Virginia

A New Adamson United Horizontal Calender Designed especially for *FLOOR TILE*

This completely redesigned 30" x 54" two-roll, horizontal, floor tile calender, built for a leading manufacturer of flooring material, embodies the following features:

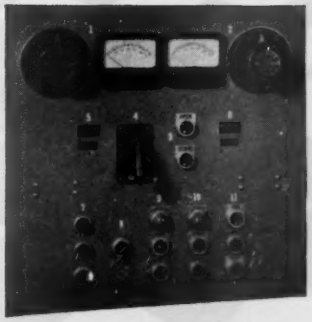
- Rolls—chilled cast iron, drilled type, supported in anti-friction, self-aligning roller bearings, flood lubricated.
- Connecting gears housed in separate pinion stand, running on fixed centers, with oil flood lubrication.
- Front roll driven by means of Mill-Type, Universal Coupling.
- Roll Adjustments—automatic type, driven by electric motors. Selsyns and counters continuously indicate exact position of front roll.
- Calender speed controllable over a wide range.
- Sight gages, valves and temperature indicators provided for controlling oil flow to each main bearing.



CENTRALIZED ELECTRICAL CONTROL PANEL FOR TANDEM ARRANGEMENT OF TWO CALENDERS

1. Speed Control and Indicator for Calender No. 1.
2. Speed Control and Indicator for Calender No. 2.
3. Push Button Control for Both Roll Adjustment Motors.
4. Selector for Roll Adjustment Motors.
5. Roll Gap Indicator—Left Adjusting Screw.
6. Roll Gap Indicator—Right Adjusting Screw.
7. Variable Speed Clutch and Emergency Brake Control.
8. Selector Switch for Either Tandem or Individual Operation.
9. Pinion Stand Lubrication Pump Controls.
10. Main Roll Bearing Lubrication Pump Controls.
11. Main Drive Motor Control.

Write for our new calender catalog.



Enlarged view of electrical control panel

ADAMSON UNITED COMPANY

AKRON 4, OHIO

SUBSIDIARY OF UNITED ENGINEERING & FOUNDRY COMPANY

Branch Offices in Principal Cities

We can furnish field service on honing refiner and calender rolls in place. Write for details.

birds of a feather flock together

Indicates Compatibility

Like: Ham & Eggs — Bread & Butter
MARBON "8000" & Rubber (Natural or Synthetic)

Compatibility of MARBON "8000" with rubber produces the ultimate in unit reinforcement.

You'll find not only Improved Physicals, but
Improved Processing
Improved Appearance
Unlimited Colors

Request Technical Service & Samples

MARBON CORPORATION
GARY INDIANA

highest
whiteness
...brightness

Calco's unitane® O-220 titanium dioxide gives maximum whitening at minimum cost

You secure maximum whitening effects with minimum loading—and cost—in your rubber products with UNITANE O-220, the Anatase Type Titanium Dioxide. Specify it for brilliance in white and white-tinted articles.

Ask your Calco representative for information and grade of UNITANE best suited to your needs.

Calco

AMERICAN Cyanamid COMPANY

CALCO CHEMICAL DIVISION
PIGMENT DEPARTMENT
BOUND BROOK, NEW JERSEY
Branch Offices and Warehouses in Principal Cities

Indispensable TO YOU IN THE RUBBER INDUSTRY—

Gives Your Products

PROTECTION and SALES APPEAL

at Little Cost!

BEACOFINISH—a unique family of coating materials conceived to give your products greater durability and eye appeal. These highly concentrated wax emulsions that can be diluted with up to four parts of water can be used with the utmost safety and economy.

BEACOFINISH is therefore of four-fold importance to you:—

1. ***It Protects*** your products against their natural enemies—air, sunlight, moisture and excessive handling.
2. ***It Improves*** the appearance of your product for its uniform coating stimulates greater consumer interest.
3. ***It's Economical*** because its high dilution potential (without losing efficiency) allows one gallon to cover 15,000 sq. ft.
4. ***It's Safe*** being a wax in water emulsion, it eliminates the fire and health hazards of volatile-solvent based finishes.

BEACOFINISH can be applied by dipping, sponging, spraying or brushing—dries in about 20 minutes—faster if force-dried—to give a hard protective coating of great elasticity.

BEACOFINISH may be ordered in Neutral or Black, in varying degrees of luster from brilliant to dull. It is so concentrated, from one drum you can obtain potentially up to five drums of superior coating for your products.

CONSULT US—WRITE US TODAY

Let us show you how BEACOFINISH can make your products more attractive and saleable—protect them from damage—you from loss—in production and transit!

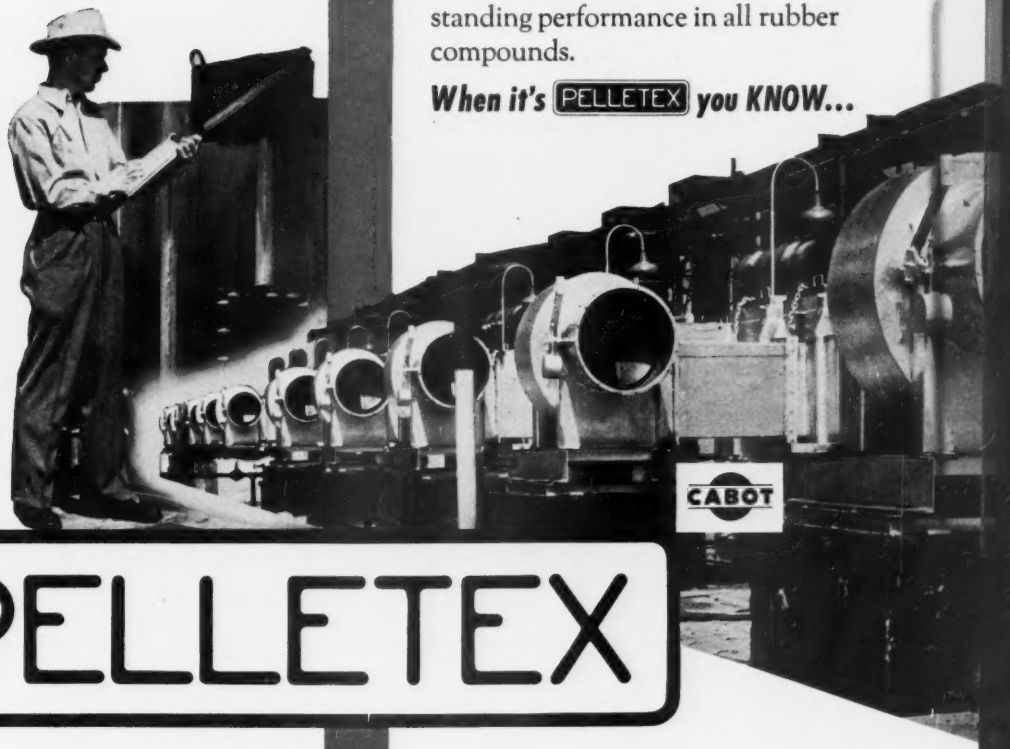
THE BEACON COMPANY
Chemical Manufacturers
97 BICKFORD STREET
BOSTON 30 MASSACHUSETTS

In Canada: PRESCOTT & CO., Reg'd.
774 St. PAUL ST. W. MONTREAL

Control

Control is the answer to PELLETEX SRF carbon black superiority. Throughout every step of production, PELLETEX quality is checked, regulated and maintained. In the laboratory, PELLETEX is evaluated in modern testing apparatus for conformity to top quality specifications. That's why rubber manufacturers rely on PELLETEX for dependable uniformity and outstanding performance in all rubber compounds.

When it's PELLETEX you KNOW...



PELLETEX

The GENERAL ATLAS Carbon Co.

77 FRANKLIN STREET, BOSTON 10, MASS.

Herron Bros. & Meyer Inc., New York and Akron • Herron & Meyer of Chicago, Chicago • Raw Materials Company, Boston
H. N. Richards Company, Trenton • The B. E. Dougherty Company, Los Angeles and San Francisco • Delacour-Gorrie Limited, Toronto

Chemicals you live by

THE RIGHT ANSWER!

FOR YOUR PRODUCT AND YOUR PROCESS

DIAMOND ALKALI offers the rubber manufacturer a wide range of grades and types of *Precipitated Calcium Carbonates*, specifically designed to meet varying product requirements and processing methods. All are chemically precipitated under accurately controlled conditions to produce the desired particle size and chemical composition of each brand.

◆ ◆ ◆

ULTRA FINE CALCIUM CARBONATES FOR MAXIMUM REINFORCING EFFECT

Super Multifex* • Multifex* • Multifex MM*
Multifex MM* (Special)

These ultra-fine precipitated calcium carbonates are recommended for light or dark colored, soft, flexible rubber compounds where maximum tear resistance and tensile strength are desired.

PRECIPITATED CALCIUM CARBONATES FOR SPECIAL PROCESSES

Kalite* • Millical* • Suspenso* • Non-Fer-Al*

DIAMOND ALKALI'S Technical Service Staff is available to assist you in the selection of the DIAMOND Precipitated Calcium Carbonate best suited to your products and processes, and in their application to your compounding. Just call your nearest DIAMOND Sales Office. *●

Write for our bulletin "Precipitated Calcium Carbonates for Rubber Compounds."

DIAMOND SALES OFFICES: Boston, New York, Philadelphia, Pittsburgh, Cleveland, Cincinnati, Chicago, St. Louis, Memphis, Houston.
DIAMOND DISTRIBUTORS: C. L. Duncan Co., San Francisco and Los Angeles; Van Waters and Rogers, Inc., Seattle and Portland, U.S.A.; Harrisons and Crosfield, Dominion of Canada.

DIAMOND ALKALI CHEMICALS

DIAMOND CALCIUM CARBONATES

DIAMOND ALKALI COMPANY • CLEVELAND 14, OHIO

MAKING THE BEST *Better!*

In Southeast Asia, selected rubber trees are cross-pollinated to breed higher-yielding strains.

NATURAL RUBBER GROWERS START A "5-YEAR PLAN" OF RESEARCH

Spurred by synthetic rubber competition and the need for an expanding market, natural rubber growers in Malaya are taxing themselves to undertake a new 5-year plan of research and market development.

Quality surveys in the United States, their principal market, have shown that natural rubber is still the best general purpose rubber by a good margin. The natural rubber growers intend to hold this market by producing a better and better product at lower cost.

Research begins in Malaya at the Rubber Research Institute where botanists check fungus diseases, develop high-yielding rubber trees, conduct soil tests and experiment with insecticides. A continual program of education is carried on among the hundreds of thousands of one-family rubber farms of a few acres as well as the larger "estates".

In England and on the Continent, expanded research centers of the producing industry study new uses and new methods of compounding and processing rubber.

And in the United States, the Natural Rubber Bureau is conducting market studies and carrying on promotional campaigns to expand the sales of natural rubber.

Natural rubber is the chief source of income to millions of people in Southeast Asia. Their prosperity depends on a stable and expanding market.

Natural Rubber Bureau

1631 K St., N. W., Washington 6, D. C.

Natural Rubber **Nature and Science Serving Mankind**

HIGH GRADE CALCIUM CARBONATE EXTENDERS AND FILLERS FROM SELECTED CRYSTALLINE MARBLE

GamaCo

Because of its low top particle size, GamaCo gives unusual performance as to extrusion rate, flex resistance, and abrasion resistance. In comparison with other similar pigments it will show moderate increases in modulus and tensile strength. These tendencies are due in part to its straight line distribution—and the absence of an excess of extreme fines. GamaCo disperses relatively quickly and thoroughly.

CALWHITE

Calwhite's particle size range makes it of interest in extruded goods and proofed goods where dry ground products (a small percentage of the particles which are usually over 40 microns) create processing and finishing problems. Compared with other similar pigments the slight reduction in its particle size permits increased loadings of 20-50% without loss of physical properties.

CHECK THESE ADVANTAGES OF GEORGIA MARBLE CALCIUM CARBONATE

1. Uniformity of color, particle size, moisture content, packaging—safeguarded by constant control.
2. Unlimited company owned and operated natural resources.
3. Three large New Mills (built post war) with the most modern equipment for producing water ground and air floated, classified calcium carbonate pigments.
4. A milling capacity large enough to fill all orders promptly—regardless of size.
5. A wide range of particle sizes from 200 mesh to minus 10 microns.
6. Mixed carloads at carload prices.

PRODUCED BY

CALCIUM PRODUCTS DIVISION

The Georgia Marble Co., Tate, Georgia

Products and information available through the following representatives:

Akron Chemical Co., Akron 4, Ohio; John R. Bice Co., Los Angeles 13, Cal.; George C. Brandt, Inc., St. Paul 4, Minn.; Joseph C. Burns & Co., Pittsburgh, Pa.; Commercial Chemical, Ltd., Vancouver, B. C.; Deeks & Sprinkel Co., Cincinnati 2, Ohio; Deeks, Sprinkel & Miller, Inc., Louisville 2, Ky.; R. L. Ferguson & Co., Milwaukee 2, Wis.; Gesco Corp., Dunedin, Fla.; Griffith-Mehaffey Co., Inc., New Orleans 12, La.; C. P. Hall Co. of Ill., Chicago 38, Ill.; R. T. Hopkins & Co., Atlanta, Ga.; Harry C. Knode & Co., Houston 19, Tex.; Morton-Myers Co., Kansas City 8, Mo.; Pacific Coast Chemicals, San Francisco, Cal.; Norman G. Schabel, Cleveland, Ohio; Standard Chemical Co., Ltd., Leeside, Toronto, Ontario; Standard Chemical Co., Ltd., Montreal, Quebec; Tamms Industries, Inc., Chicago, Ill.; Zehrung Chemical Co., Portland 9, Ore.; Zehrung Chemical Co., Seattle, Wash.

T. N. Loser, Mgr. Eastern Sales Office, Plainfield, N. J. Warehouse, Brooklyn, N. Y.

NATURAL and SYNTHETIC RUBBER LATEX and LATEX COMPOUNDS

Available as Prevulcanized, Vulcanizable, or Unvulcanized

We supply natural and synthetic rubber latex and latex compounds for hundreds of products in over twenty industries. If you are bonding, coating, impregnating, saturating, extruding, flocking, molding, casting, or dipping, we can offer you industrially proven compounds. For new and special purposes we are prepared to develop new compounds.

General Latex & Chemical Corp.
666 Main Street, Cambridge, Massachusetts
GENERAL LATEX & CHEMICALS (Canada) LTD.
Verdun Industrial Building, Verdun, Montreal, Quebec

SALES REPRESENTATIVES:
525 Washington Highway, Buffalo 21, N. Y.
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INDUSTRIAL ADHESIVES
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Combining Fabrics
Cork
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Fiber Bat
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Library Paste
Masking Tape
Paper
Pressure Sensitive Tape

SHOE ADHESIVES
Foxing
Heel Cover
Sole Attaching
Sole Laying

IMPREGNATION
Box Toes
Curled Hair
Fabric
Flame Proofing
Napped Fabrics
Paper
Rug Sizing
Rug Underlays
Thread
Tire Cord

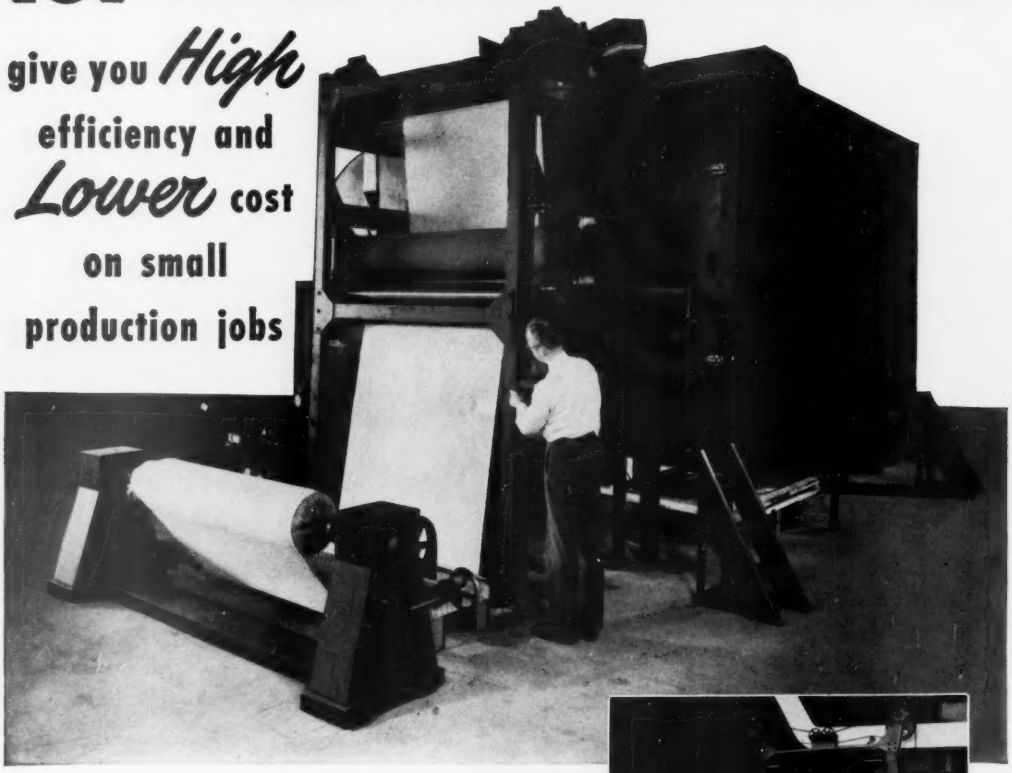
COATINGS
Bath Mats
Canvas Gloves
Felt
Fishermens' Garments
Metal
Occupational Clothing
Paper
Pile Sealing
Raincoats
Sheeting
Tank
Wire Goods

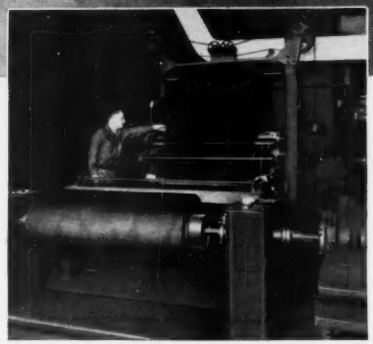
DIPPED GOODS
Baby Pants
Balloons
Bathing Caps
Bladders (Football, Soccer, Basketball)
Diaphragms
Finger Cots
Footwear
Household Gloves
Ink Sacs
Nipples
Prophylactics
Sheeting
Surgeon's Gloves
Toy Balloon Outfits
Toys

MISCELLANEOUS
Allergy Pillow and Mattress Paint
Casting and Molding
Chewing Gum
Flexible Molds
Flooring
Mannequins
Rubber Dolls
Advertising Novelties

IOI TIRE CORD IMPREGNATORS–SATURATORS

give you *High* efficiency and *Lower* cost on small production jobs





IOI DESIGNS, builds and installs woven or weftless fabric latexing systems to meet your specific production conditions – from 70-yard (or more) per minute units down to low speed units like the one above, or 30-yard per minute units like the one at the right.

If you process heavy ducks, tire cord or similar fabrics, you'll find the saturating, drying and tensioning unit shown above ideally suited to your requirements. It will handle 24-ounce cotton duck at drying speeds of 10 yards per minute at 60% in-dryer moisture. This unit is the smallest of many **IOI** installations throughout the world.

It features a complete saturating and padding unit, a high velocity, constant tension, convection heated dryer or evaporator and constant tension final windup. The padder with retractable tank and rubber covered squeeze rolls will develop 24,000-pound squeeze pressure.

Fluid hydraulic, variable voltage or mechanical system drive can be used. Heating system utilizes steam, gas or any commercial fuel. Sizing solutions for impregnant can be latex, starch sizing or oganosol resins.

Do you want to cut Production Costs?

IOI's advanced engineering on sound basic principles can help you if you will outline for us your specific production problem. Write for "Blueprint for Industry, Part V, Coating and Handling Equipment for Textiles, Papers, Films, and Foils" and "The Handling of Webs and Monofilaments."

INDUSTRIAL IOI ENGINEERING VERSATILITY OVENS, INC.

13825 TRISKETT ROAD CLEVELAND 11, OHIO

CUSTOMERS BUY BY APPEARANCE TOO!

You may have the longest lasting floor tile on the market — but your customers can't see into the future. All they can see is what appears on the surface — and that includes the price tag. You can't afford a lot of rejects or high mold maintenance costs — and you can't sell a product that doesn't have a high and uniform surface finish. That's why most rubber companies use Dow Corning Silicone mold release agents — DC Mold Release Emulsions for molds and curing bags — DC Mold Release Fluid on green tire carcasses and for bead and parting line release. They give you molded rubber goods with more sales appeal; they reduce scrap to an all-time low and cut mold maintenance costs by as much as 80%.

SO SPECIFY

DOW CORNING SILICONE MOLD RELEASE AGENTS

Dow Corning Silicones Mean Business!

For more information write today for data sheet R-18

DOW CORNING CORPORATION, MIDLAND, MICHIGAN

ATLANTA • CHICAGO • CLEVELAND • DALLAS • LOS ANGELES • NEW YORK

In Canada: Fiberglas Canada Ltd., Toronto

Great Britain: Albright and Wilson Ltd., London

Dow Corning

FIRST IN SILICONES

ROBERTSON

"Packaged"

OIL - HYDRAULIC

LEAD ENCASING PRESS

IT'S *New* . . .

SELF-CONTAINED

HIGHLY EFFICIENT

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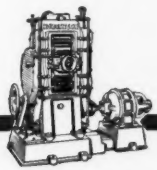

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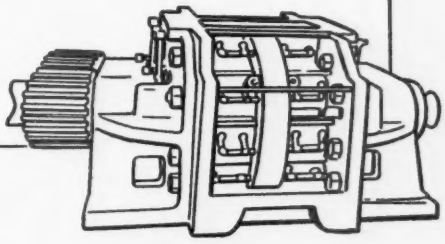

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RUBBER AGE

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Manufacture of Latex Foam Sponge Rubber

A Review of Methods of Manufacture, the Trends Towards New Equipment, and the Growth Pattern of the Industry

By E. CHARLTON CROCKER

General Latex & Chemical Corporation, Cambridge 39, Mass.

LATEX foam is a material made up of thousands of tiny interconnecting air cells made of rubber latex. Actually, there are up to about 250,000 of the cells in a cubic inch of latex foam. In sheet form latex foam varies from about 85% to 95% of air by volume. The amount of air is even higher in the case of the molded shapes because of the presence of the many cores.

Latex foam has already proved that it is an excellent cushioning material in trains, planes, automobiles and furniture. There are many reasons why it is so excellent a material, among them being the following:

1. It is comfortable. Its equal distribution of the load reduces fatigue.
2. It is durable. Tests have shown that latex foam mattresses after 10 million compressions were in better shape than other types after only 250,000. It can be easily repaired if torn.
3. It is clean. It breathes as a result of the motion of the person resting upon it and thus it feels cool. It is ideal for persons allergic to cotton, hair and feathers. It can be easily washed.
4. It is light, and therefore easy to handle.
5. It is versatile, quiet, sanitary.
6. Even though its unit cost is higher than other upholstery materials, it is economical because it lasts longer and because it is so easy to handle in production.
7. It can be made in a wide range of densities and in a wide range of color.

Latex foam is often confused with blown sponge. Sponge is an air-rubber mixture made by chemically blowing cells into milled rubber. Normally, ammonium bicarbonate, sodium bicarbonate, or compounds such as DuPont's Unicel (Diazoaminobenzene) are used. These blowing agents are milled into the rubber along with the curing ingredients, sulfur, antioxidants, softeners and fillers. The mixture is calendered or extruded and conventionally cured between hot platens or in special heated molds.

Sponge is much more dense than foam; normally the air would amount to only 50 to 65% of the volume as contrasted to 85 to 95% for foam. It has a texture or "hand" which is rough, coarse and firm, whereas latex foam has a soft, velvety smooth feel. Generally speaking, it has a higher odor intensity than latex foam.

Description of the Whipping Process

The largest proportion of latex foam rubber manufactured today is made by the process developed by Chapman et al and assigned to the Dunlop Rubber Company, Ltd., of Birmingham, England. The basic Chapman patent *(1)* expired just over a year ago. With this process, which we shall refer to as the whipping process, a multi-component latex compound is used.

The manufacturing process is preceded by a pre-

Note: This article is based on a talk given by the author before the New York Rubber Group in New York, N. Y., on April 28, 1950.

Fig. 1—Frothing of latex for foam manufacture is conventionally accomplished in vertical mixers of this type.

treatment of the latex. A controlled amount of sulfur and accelerators is added to the latex for the purpose of "maturing", which includes, among other effects, partial vulcanization. The latex is kept under good agitation in order to reduce the ammonia content. The maturing operation is carried out under conditions of controlled temperature and time. After maturing is complete, the latex must be maintained under refrigeration until use and then warmed up again to room temperature at the time of use. The reason this maturing step is carried out is to better control the hardness and shrinkage of the product.

Great stress is laid upon this phase of the operation in the whipping process since the size and hardness of the dry product may be controlled more readily from batch to batch of compound and between batches of foam. Since most products are manufactured to a close hardness specification it is important that every effort be made to provide a compound which will give the minimum variation. Similarly, products are made to a size specification which although somewhat more lenient than the hardness specification, nevertheless can cause considerable trouble to the manufacturer if the molds he lays down produce undersize or even oversize products due to variation in compound from batch to batch.

There are foam compounds on the market which do not require the above pre-treatment. These compounds are based upon an entirely different soap and gel system which makes possible savings in pre-treatment costs.

With the exception of the maturing step, all foam compounds are treated virtually alike. The latex component, standardized as to foaming characteristics, is first frothed to a point somewhat below the desired volume increase. Conventionally, frothing is accomplished in a vertical mixer similar to those used in the bakery industry (Fig. 1). The mixers have multi-wire whips which rotate in a planetary motion at about 225 rpm. The sizes used by the foam industry vary between 80 and 400 quarts. The mixing time varies between 15 and 20 minutes depending upon the required density.

When the initial volume is reached, the curing and gelling agents are separately added to the batch. The speed of agitation is often reduced at this time so as to reduce the bubble size. Agitation is continued for several more minutes to assure that the added components are thoroughly dispersed throughout the foam and the foam is brought to final volume. At this point the foam resembles whipped cream.

The time period between the addition of the gelling agent and the point at which the foam gels is a function of two factors: (1) the amount of gelling agent used and (2) the temperature of the system. Generally speaking, the amount of gelling agent is controlled so that gelation will occur between 4 and 8 minutes after the

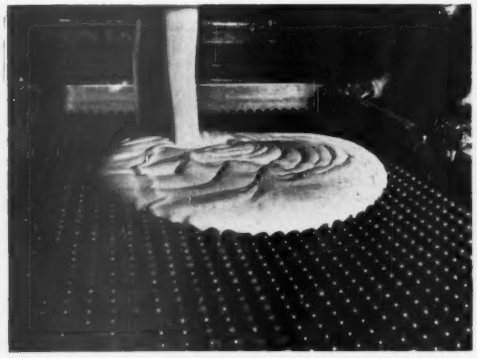

Fig. 2—The ungelled foam is normally spread by paddles into aluminum molds for molded goods. A mattress mold is shown.

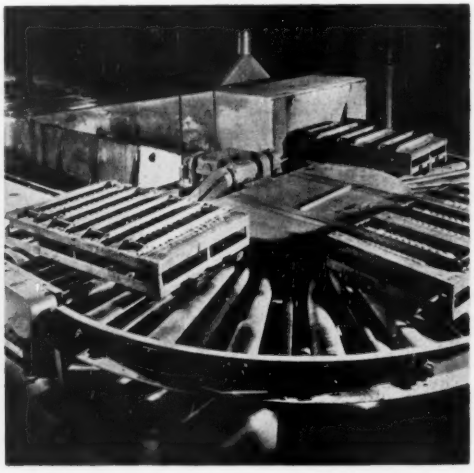

Fig. 3—Although curing is generally carried out in steam ovens some foam is cured in boiling water. In this view mattress sections are being conveyed to a hot water bath for curing.

Fig. 4—After curing, finished products are stripped from the mold. Here a pillow is being stripped from a waffle-like mold.

gelling agent is added. There are upper and lower limits of temperature which are used in order to guarantee controllable gelation. These temperature limits are approximately 70° F. to 85° F.

The gelling agent generally used in the whipping process is sodium silicofluoride. Its performance as a gelling agent depends upon its hydrolysis to form hydrofluosilicic acid which in itself hydrolyzes to form hydrofluoric acid and silicic acid.

Some people contend that the gelation actually results from the formation of free acid and the consequent coagulation of the latex. Others postulate that gelation occurs from the formation of an SiO_2 gel which adsorbs the moisture and protective colloid from the latex particle thus effecting coagulation. The work of Madge and Pounder *(2)* on this phenomenon is worth reviewing, as is that by Murphy, Madge and Pounder *(3)*.

Other Types of Gelling Agents

There are other gelling agents which can be used in this latex system which function by entirely different mechanisms. Included among those materials are ammonium salts, the most important being ammonium persulfate.

There are still other gelling agents that function only when activated by heat thus producing a foam which has a longer working period. These heat-active materials include polyvinyl methyl ether, 2-nitropropane, and zinc-ammonia complexes. Ideal as these materials may sound on paper, there are certain operating difficulties involved and the net result is that the larger proportion of foam manufactured today both in the United States and abroad uses sodium silicofluoride as the gelling agent.

The ungelled foam is normally spread by paddles into aluminum molds when molded goods are being made (Fig. 2). These molds normally have loose fitting vented covers. When slab foam is being manufactured on a conveyor belt, a series of doctor blades are generally used to form a product of the desired thickness. In the case of slabs, gelling is usually accomplished in

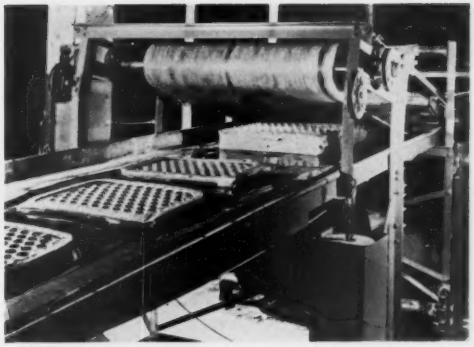

Fig. 5—Conveyor type machines of this kind are frequently used to wash thin products, such as slabs, etc. They utilize squeeze rolls.

a hot air chamber after the foam has been scraped to the desired thickness.

Curing is conventionally carried out in steam ovens, although some foam is cured in boiling water (Fig. 3). For special applications, steam autoclaves operating at 40 to 60 pounds gauge pressure are occasionally used.

The time of cure depends upon the type of product, the type of mold, and the curing equipment employed. Generally speaking, thin shapes, such as ½-inch slabs, cure in about 20 minutes in a steam atmosphere maintained at 212° F. while thick items, such as mattresses, in a closed mold require nearer 35 minutes.

High frequency heating, often referred to as H. F. heating or dielectric heating, has been considered for use in the foam rubber industry. Several of the larger manufacturers have actually installed production size

Fig. 6—Some companies utilize centrifuges turning at high speed to give an additional washing to molded goods and to remove any surplus water.

Fig. 7—Foam products are sped from washers to driers. In this view, automobile seat toppers are being conveyed direct from a washing to a drying operation.

H. F. curing units, but they are not in general use throughout the foam industry for routine production. One large manufacturer is using the H. F. unit for rapid temperature boosting at the beginning of the curing period and again at the beginning of the drying period. I believe it is fair to say that H. F. heating requires a greater capital investment, higher operating costs and higher maintenance costs than the equivalent steam facilities. Its advantages lie in its speed and lessened space requirements.

After curing is complete the finished product is stripped from the mold (Fig. 4). It is then customary to wash the foam product. This washing is normally carried out in cold water. A few manufacturers use a slightly alkaline bath. The purpose of washing is principally to remove the soap which is added to the latex to assist frothing and the nonrubber constituents including proteins, amino acids, etc, which occur naturally in the latex. The result of washing is the removal of virtually all of the odor from the product; also, a more resilient product.

Conventionally, thin products such as slabs are washed by being passed through a series of squeeze rolls which are submerged in water (Fig. 5). Normally, molded products such as mattresses are washed in centrifuges similar to the type used in the laundry industry (Fig. 6). After washing is complete, the foam is either passed through squeeze rolls or spun in a centrifuge. This operation reduces the moisture content to about 25%.

Fig. 7 shows molded automobile seat toppers en route from the washer to the drier at Firestone's Fall River plant. Drying is usually accomplished in special drying rooms with circulated hot air (Fig. 8). This air is usually between 160° and 180° F. If speed of drying or floor space is critical, drying is expedited by drawing hot air through the foam on suction tables.

There are processes other than the whipping process currently in use, although on a somewhat limited basis. The most important of these is the so-called Talalay Process. In this process the latex is foamed with the aid of hydrogen peroxide or some volatile solvent under high vacuum, frozen, coagulated by bleeding in carbon dioxide or other acid gas, thawed and cured in steam at atmospheric pressure. The process uses heavy, costly equipment, but economies result from the high degree of mechanization which is possible and savings accrue from the lack of material losses

Fig. 8—Drying is generally accomplished in special rooms with circulated hot air. Here molded products are being rolled into a hot air oven on rack-trucks for final drying.

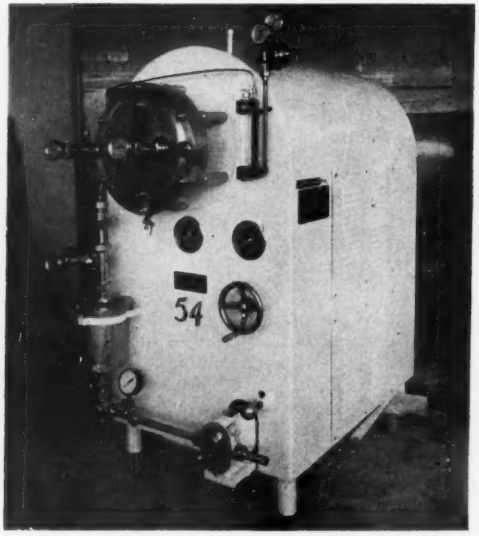

Fig. 9—Front view of the Oakes continuous mixer set up for the frothing of latex in conjunction with a small pre-frother.

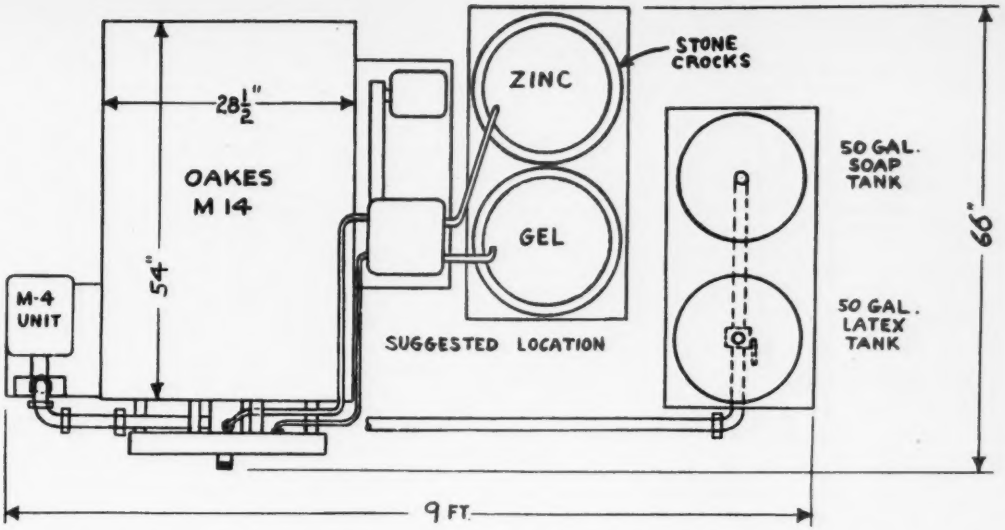

Fig. 10—Suggested floor plan for the Oakes mixer indicating total amount of floor space required.

which normally occur when molds are filled in the whipping process.

Continuous Foaming Equipment

Perhaps the biggest single change in foam manufacture during recent years has been the introduction of continuous foaming equipment. Several of the larger manufacturers have developed their own equipment for continuously foaming latex and automatically proportioning into the froth at the correct point in the mixing cycle the correct amounts of the curing and gelling ingredients. In addition to these machines, there are now on the market two other machines which are available to any foam manufacturer, viz., the Oakes continuous mixer, manufactured by the American Machine and Foundry Company of New York, N. Y., and the Flow-Master, manufactured by the Marco Company, Inc., of Wilmington, Delaware. It is probable that other continuous machines will come onto the market in the future.

Brief descriptions of the Oakes and Flow-Master machines should prove of interest. Fig. 9 depicts the Oakes continuous mixer as it is set up for the frothing of latex in conjunction with the company's small prefrother. This unit is capable of frothing latex for blow-ups between 6 and 18 times and with throughput capacity of latex from 400 to 1800 pounds per hour. Mixing pressure varies from 20 to 60 pounds, depending on the throughput required. It is possible to connect the Oakes unit to systems employing injection molding. Final blow-up is not obtained in the unit until the foam reaches atmospheric pressure which means that in the case of injection molding the material is then in the molds and there is no further handling or possible damage to the foam due to any mechanical manipulation of the foam. Fig. 10 is a suggested floor plan for the Oakes mixer showing the metering equipment for the gel and zinc oxide.

The Marco AL-500 Flow-Master Reactor Foam Generator is shown in Fig. 11. In the operation of this unit, the compounded latex is drawn into and metered by a pump (1) which delivers the latex to another pump (2) Since the second pump is much larger than the first one, and operates at a higher speed, it not only pumps the latex but also a certain amount of air, the amount of which is predetermined by the speed of the pump. The combined air and latex is then pumped to an upper cylinder (3) which is equipped with a series of beating devices and here the first stage of emulsification is effected. The material then passes by gravity

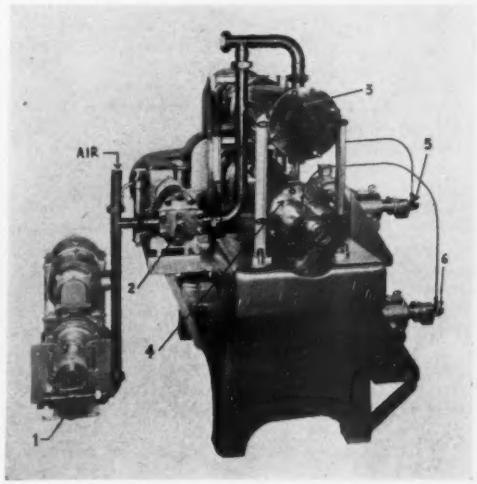

Fig. 11—View of the Marco AL-500 Flow-Master Foam Generator. (See text for explanation of operation).

to a lower cylinder (4) where emulsification is completed. The accelerator is proportioned by still another pump (5) and delivered towards the forward end of the lower cylinder (4). Another pump (6) proportions and delivers the gelling agent to the front section of the reactor.

Once the pumps of the Marco unit have been calibrated to obtain the type and density of foam rubber desired, the machine will produce a uniform product at a rate up to 500 gph of the finished foam. The machine may be started and stopped at will without danger of changing the character of the product, according to the manufacturer, except in cases where it is shut-down for a period of time. In the latter instance, it is only necessary to remove the small front section of the unit and clean out the gelled compound. The lower cylinder (4) is fitted with drains to make cleaning a simple process.

Synthetic Rubber Formulations

Many foam formulations are based upon synthetic rubber latex in whole or in part. At the time of Pearl Harbor virtually all foam was being made from natural latex. Natural rubber soon became a critical material and only limited amounts became available for normal civilian uses. Therefore, what rubber latex was available was extended by the use of reclaim rubber dispersions and mineral fillers. By early 1942, no more natural rubber latex was allocated for use in civilian manufacture of foam rubber and neoprene latex was substituted.

Neoprene Type 60 was the first synthetic latex used in quantity for foam manufacture. It was more costly than natural rubber latex and had certain difficulties particularly when used for manufacturing molded goods. These difficulties were inherent in the low wet film strength of the neoprene film and the relatively low volume solids of the dry neoprene. Foam made from Type 60 Neoprene in those days required a "conditioning" period before curing. This conditioning period amounted to holding the gelled foam for about one hour in a room with circulating warm air. If the foam were not subjected to this conditioning period it would develop serious surface fissures during curing. Improvements in neoprene latex technology soon came along which today minimize many of the original operating problems. There are certain properties of neoprene foam that make it a useful material for many applications. Most significant of these are the oil-resistant and flame-resistant properties.

By 1945 some manufacturers were extending their quotas of natural latex by blending it with equal parts of Buna N latex. A special 60% solids Buna N latex was manufactured specifically for foam. This material was made by creaming a low solids Buna N. The amount of Buna N latex used for this purpose was relatively small, and it was used only over about a six-month period. It was superseded by the then newly-developed GR-S Type V latex.

GR-S latex was, of course, available during the period when Buna N was being used. The difficulty with the earlier types of GR-S was that they were too low in solids content to make good foam. They could not be concentrated by centrifuging because the particle size was too small, and the specific gravity was too close to 1.0. Creaming produced a more concentrated latex, but it was not high in solids enough to be satisfactory. When GR-S was heat concentrated, the soap content rose too high to allow a proper gelling compound. Therefore, a new type was needed. Type V, which is a high solids latex, running approximately 60%, was developed by the Goodyear Tire and Rubber Company and was first manufactured in a Goodyear-operated R. F. C. GR-S plant.

It was discovered that by using a very small quantity of dispersed soap the polymerization of butadiene and styrene was centered on fewer nuclei, and as a result larger particle and higher solids latex was produced. The greatest accomplishment in the development of GR-S Type V is considered by many people to be the solution to the heat transfer problems associated with this particular polymerization. GR-S Type V soon replaced Buna N latex for the manufacture of foam.

GR-S Type VII has also been used in the foam rubber industry. Type VII is similar to Type V in many ways. Both latices are approximately 60% solids. Type VII has a butadiene-styrene ratio of 80:20 while Type V has a ratio of 70:30. However, the most significant difference between the two latices is the specification of the residual styrene. Type V has a specified residual styrene content of 1.5% maximum, while Type VII has a maximum of 0.1%. The styrene is removed from Type VII by steam stripping. It is claimed that the reduced styrene content results in a less odoriferous foam product. Both GR-S Type V and Type VII are being used today in the manufacture of foam. These latices are always blended with natural latex; normally, the percentage of GR-S varies between 20 and 50%.

Another butadiene-styrene polymer which is becoming important in the foam industry is X-547. This is the experimental polymer made by the new "cold process." This material is being sold in tank car quantities. It is being blended with GR-S and the mixture used with natural latex in about the same percentages as noted previously.

Generally speaking, foam containing GR-S has a characteristic odor, and, therefore, it is used today for automotive and other fields where odor intensity is not critical. Neoprene foam and foam containing GR-S are handled virtually the same in manufacture as natural latex foam.

Design Considerations

Whether a product is manufactured from either natural or synthetic rubber latices, and by any of the above processes, its design for any specific application includes a number of factors which must be borne in mind. Take, for example, a bus seat. It must first of all be designed in length and width to fit the frame of the seat being supplied, and in the thickness to give the most support with the minimum of material consistent with provision of maximum feeling of comfort.

The finished dry product is made oversize in length and width to allow for upholstery compression which is necessary to fill out the covering material and make a snug, tailored fit. The amount of compression allowance varies with the type of covering material being used and with the specific application and density of products.

Once the dimensions of the finished dry product are determined it is necessary to design the mold with sufficient oversize to allow for the natural shrinkage of the latex. Before this can be done, it is necessary to know the shrinkage characteristics of the compound being used and the normal expected variation from the mean. The length and other dimensions of the product also have an effect upon shrinkage and the factor to be used in designing the mold.

Growth of the Industry

The amount of latex foam produced in the United States has been rapidly increasing in recent years. Ac-

cording to one report *(4)*, the consumption of latex for foam increased from 18,000,000 dry pounds in the maximum pre-war year to 39,000,000 pounds in 1948 and 55,000,000 pounds in 1949. It was estimated that consumption would amount to 70,000,000 to 80,000,000 dry pounds in 1950 and would reach 185,000,000 pounds by 1960.

Some of the weight of foam production is made up of neoprene and GR-S, but the greater portion by far is natural latex. The United States imports of natural latex during 1948 and 1949 were 73 million pounds and 67 million pounds respectively. Therefore, it can be seen that approximately one-half of our imported latex is now being converted into latex foam.

Quoting again *(4)*, approximately 65% of foam poundage is going into transportation seating, i.e., train, plane, automobile, and bus seating, 15% is going into mattresses and pillows, 10% into furniture, and 10% into miscellaneous items. The miscellaneous category includes rug underlays, shoe inner soles, toys, and cosmetic uses. Large quantities of foam rubber shoulder pads, corset pads, powder puffs and, of course, "falsies" are being made. One manufacturer alone is currently turning out more than one million pairs of falsies per year. Foam rubber is being used widely, but in small quantities, for prosthetic restorations. There are a myriad of small and unusual uses for foam rubber ranging from packing materials to relief maps.

Summary

To summarize, it can be said that the foam industry is well founded, but is in reality only in its infancy. The superiority of foam products particularly from the point of view of cushioning materials guarantees them a permanent place in our domestic market.

Every day there are new manufacturers entering the field of foam. The large majority of foam manufacturers are using either the whipping or peroxide processes which have been outlined. There appears to be a definite trend away from the classic vertical mixers and toward the use of continuous mixers.

The quality of the product is constantly being improved and the cost has been declining. It is not anticipated that the price of foam will ever drop low enough to compete with such cheap upholstery materials as cotton, but it is already competitive with hair-filled cushions. However, in many types of upholstery work, such as automobile seats, truck seats, theatre seats, etc., which are mass produced, the saving in labor and improvements which can be realized in efficiency of operation make a foam rubber filler in some cases more economical than the conventional coil spring, cotton-padding combination. The foam rubber filler has a so-called tacking strip applied to the foam by the supplier and the upholstering operation becomes a simple one of tacking the filler to the base if it is wooden or fastening by means of "hog rings" if it is a metal deck.

The amount of "seconds" produced by foam manufacturers is constantly decreasing due to improved manufacturing techniques. There appears to be an insatiable market for foam seconds. At the moment seconds are in very short supply, and local artificial high price levels are common occurences. A large proportion of the foam seconds are being shredded and used for pillows, stuffing toys, etc. A considerable quantity is being bonded into rug underlays.

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(3) Murphy, E. A., Madge, E. W., and Pounder, D. W., Studies in the Coagulation of Preserved Latex by Sodium Silicofluoride, "Proceedings of the Second Rubber Technology Conference: 1948," Cambridge, England.
(4) *Wall Street Journal*, Oct. 11, 1949.

Rubberized Unit Is Portable Photographic Dark Room

A portable photographic dark room and briefing tent that is 80 feet long but uses nothing bulkier than columns of air for its structural members has been developed for the U. S. Air Force. The rubberized room, developed by the B. F. Goodrich Company, can be carried in the smallest military transport plane and inflated in six minutes—compared to nearly two days for the erection of other portable structures, now in experimental use, that are made of plywood and aluminum. The airborne "big top" can be deflated in 25 minutes merely by disconnecting the air-intake manifold.

The waterproof utility tent weighs only 740 pounds and is as large as a four-room home. It was demonstrated for the first time at Bolling Air Force Base by the engineering division of the Air Materiel Command. All equipment, including processing machines, chemicals and paper, and six operators were flown in aboard a single C-82 transport plane.

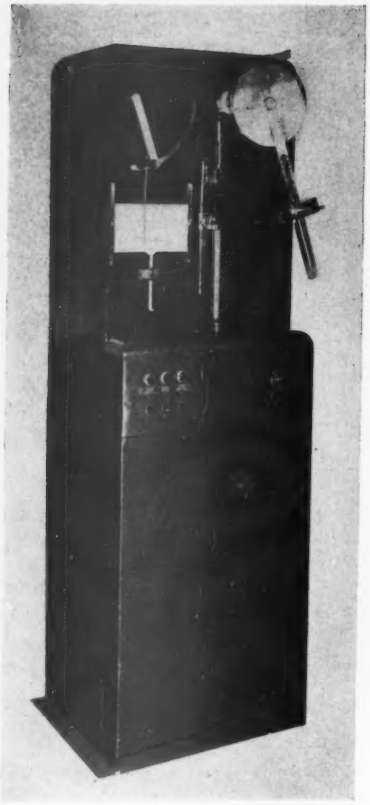
Nine U-shaped structural columns made of rubberized fiberglass-nylon fabric are inflated with three pounds of air to hold the covers in place. The darkroom is fabricated in eight sections that are fastened together with 320 feet of zippers. It can be erected with any number of sections, thus making it adaptable to a multitude of uses.

The structure was specially developed to house a new continuous film and paper processing machine capable of producing 1,000 9x9-inch aerial photographs an hour for 24 hours a day. One side of the tent is used as a briefing theater for 100 men and has a special screen for the projection of three-dimensional pictures. The tent measures 80 feet long, 21 feet wide and 16 feet high. When deflated and disassembled, it is easily packed in eight duffle bags. The outfit comes complete with a repair kit for patching any accidental rips or tears in the fabric.

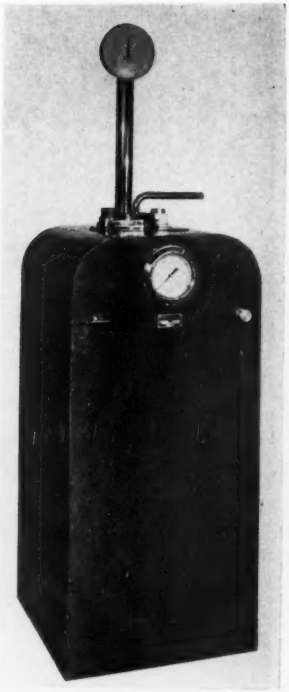
The frame columns of the portable darkroom are coated with neoprene that is flame-resistant and is also resistant to sunshine, weather and chemicals. The cover material is made of neoprene-coated nylon fabric. Goodrich engineers said this will be satisfactory for use even in low temperature areas.

Firestone-Developed

THE testing instruments depicted herewith, references to which are made in the technical literature, were developed by the Engineering Laboratories of the Firestone Tire & Rubber Co., Akron, Ohio. Many of the instruments are called for in ASTM and other testing specifications. Each of the instruments, with the exception of the Penetrometer, is manufactured by the Firestone organization. On occasion, the Penetrometer has been manufactured by Firestone, but its production has often been contracted to other concerns. Promotion and sale of the instruments is handled by the Engineering Laboratory. It is interesting to note that these instruments are not stocked. They are manufactured to order to more closely suit individual application needs. Correspondence concerning these instruments should be addressed to Department 857, Engineering Laboratories, Firestone Tire & Rubber Co., Akron 17, Ohio.



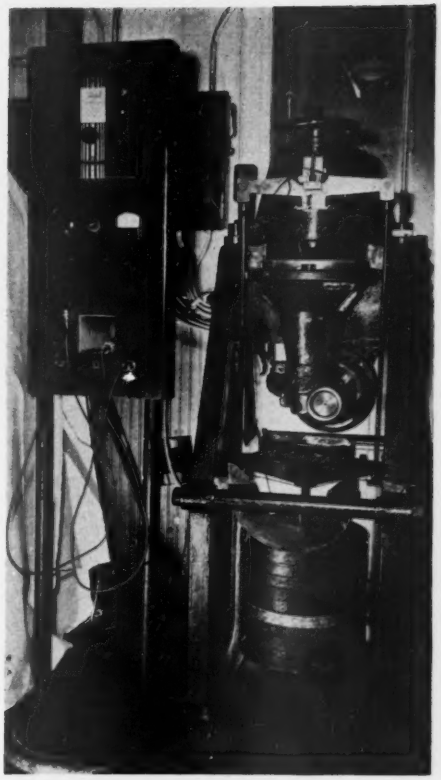
The Firestone Ring Modulus Machine (above) is a laboratory testing unit designed to evaluate the modulus characteristics of cured rubber samples. The samples are elongated at a constant rate and the tension at a selected elongation recorded on a chart. The machine returns to the starting point after the record is made. The load capacity is 0 to 40 pounds. The complete Ring Modulus Tester occupies a floor space of 30 x 30 inches and is 80 inches in height. It requires 110-volt, AC single-phase current, and 230-volt DC current for operation, and air presure of 20 psi.



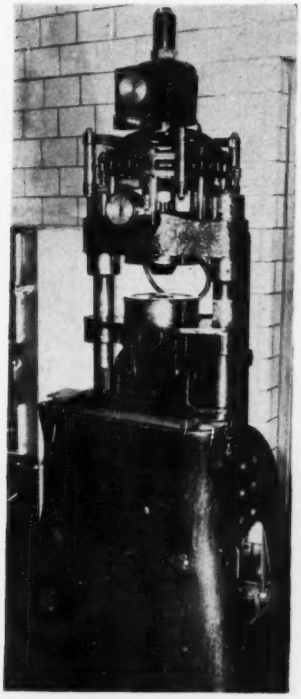
The Firestone Densimeter (right) is a machine for measuring rapidly and accurately the specific gravity of reclaimed rubber, rubber compounds, or other materials which are plastic at room temperature. The specific gravity is determined in this machine by mechanically measuring the volume of a weighed sample of plastic material when compressed under a definite pressure, the result being indicated on a calibrated dial. The Densimeter occupies a floor space of 20 x 20 inches and is 66 inches in height. It is furnished to operate on 80 psi air pressure.

The Firestone Penetrometer (on the left) is an improved hand-held device to determine hardness of a cured rubber compound. The indenting plunger has a precision, semi-spherical tip held to close tolerances to give accurate results. The spring action and dial indicator are carefully calibrated for further accuracy.

Testing Equipment



The Firestone Flexometer (above) is a machine designed for the purpose of studying heat generation and fatigue in rubber and rubber-fabric compositions during flexing. The path of the center of the lower plate is circular and of variable diameters. A running temperature test at constant speed for definite time interval or a blow-out test when rupture occurs can be made. When failure occurs in a blow-out test the machine stops and a signal is sounded. A Leeds & Northrup Thermocouple Potentiometer is furnished to indicate temperature at any time during the flexure test. The Flexometer occupies a floor space of 42 x 35 inches and is 69 inches in height. It is regularly furnished to operate on 440-volt AC, three-phase, 50-60 cycle current.



The Firestone Plastometer (left) is a machine designed to evaluate the plastic flow characteristics of uncured rubber stocks by means of extrusion. The rate of extrusion, or the time required for a plunger to travel a specific distance, displacing a definite volume, is a direct function of the relative stiffness of the stock at the temperature tested. The figure is tabulated and compared to that of the accepted standard. A Leeds & Northrup Model R recording controlling potentiometer is furnished for control of die temperature. The complete Plastometer occupies a floor space of 26 x 36 inches and is 82 inches high. Service requirements are 115-volt single-phase current and compressed air at 50 to 80 psi.

How Ohio Rubber Achieved Centralized Control for Its Materials Handling System

By A. L. MASTERS

Manager, Warehouse and Intra-Plant Transportation, Ohio Rubber Co., Willoughby, Ohio

A FEW YEARS AGO the need for centralized control of the materials handling system at the plant of the Ohio Rubber Co. at Willoughby, Ohio, was recognized by the management. After considering the possibility of an outside man, it was finally decided to select an internal employee to head up this phase of plant operation since he would be familiar with the plant and some of its handling problems.

Centralized control has been in operation at the plant for some time. It has resulted in an integrated handling system which speeds handling operations, increases tons handled per work hour, and cuts handling costs. Examples of savings effected are given in a recent tally of economies gained by the installation of the fork truck and pallet system. Fork trucks are employed in receiving, transporting, storing, processing, maintenance, and shipping operations. Savings include the following:

(1) Cheaper handling of raw materials than before the war even though the cost of labor has increased, the volume of goods handled has increased, and the warehouse-to-plant distance has been increased.

(2) Unloading of freight cars in ⅓ the time required prior to the installation of fork trucks.

(3) As much as 60% increased capacity of storage areas. New warehousing facilities are being designed to permit full use of overhead space.

(4) Facilitating maintenance of heavy equipment. A special truck eliminates rigging in many situations and easily performs numerous lifting and transporting jobs which formerly required rigorous time-consuming hand labor.

FIG. 1—Typical receiving operation at Ohio Rubber's Willoughby plant. Large quantities of raw materials are purchased already palletized.

FIG. 2—Raw materials from outlying warehouses are hauled to processing locations by Yale fork trucks of the type seen in this illustration.

(5) The avoidance of rehandling outgoing shipments by palletizing finished products as they come from the production line. Finished goods are carried through inspection and onto freight cars or street trucks without having to be taken on and off hand trucks.

The following discussion gives a number of techniques employed to effect these and other savings. It includes the new maintenance program.

Figure 1 illustrates a typical receiving operation, which, though common enough today, has cut unloading time from a matter of days to a matter of hours. Large quantities of raw materials are purchased already palletized. This eliminates stacking commodities on pallets when freight cars arrive at the receiving dock and eliminates all manual handling until commodities are taken off the pallet for processing. Pallets are returned to suppliers from time to time as they accumulate in Ohio Rubber's pallet storage. An interesting innovation used in handling bags, as shown in Figure 1, is the application of a special glue between layers. This glue prevents bags from sliding sidewise in transit or in storage, but does not hamper the lifting of bags when lifted straight up. When goods are received unpalletized, they are palletized in the freight car to permit them to be mechanically handled from there on.

Figure 2 shows a noteworthy scene which 10 years ago would have been difficult to duplicate. The stacks of pallets in the background give ample evidence of the magnitude of usefulness obtained by the fork truck and pallet system throughout American industry. Try to visualize handling by hand all the goods these pallets

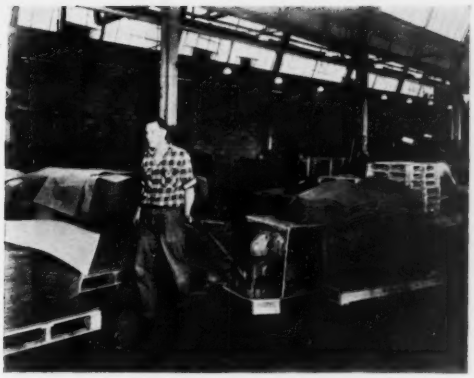


FIG. 3—Goods-in-process are moved into and out of temporary storage by "Walkie" trucks. Power for these trucks is supplied by storage batteries.

FIG. 5—Fork trucks are used to transport skid-bins of ground scrap to trailer trains (see Figure 2) which transport the bins to the mixing mills.

will hold; then visualize handling these pallets by fork truck—and the enormous savings made possible by mechanical handling are apparent. The high stacking Yale fork truck in the illustration is doing extra duty by hauling a 4-car trailer load of raw materials from an outlying warehouse to processing locations.

Figure 3 illustrates an application of the Worksaver, or "walkie" type truck. This truck has gained widespread industrial application in its short life. In this case it replaces hand trucks. The operator does not have to pull the load—he merely guides it, power being supplied by a storage battery. In addition to making the operator's work easier, the Worksaver transports heavier loads than could be handled by hand truck. "Walkie" trucks are often used on secondary floors which can't support the weight of heavier trucks; where narrow aisles must be traversed; when low capacity elevators must be ridden; and when street trucks and railway cars are to be entered for loading and unloading. The truck in the illustration moves goods-in-process into and out of temporary storage.

Figure 4 shows special three-layer structural steel racks constructed to permit high stacking of skid loads of rubber. Stock stands here for 24 hours. Formerly skids had to be stored on the floor, making a cluttered and hard-to-get-at storage area. By means of the fork truck, skid system, and rack, use is made of overhead storage space, the storage area is made much neater, stock is easier to get at, and larger loads can be handled at a time.

Figure 5 shows a skid-bin of ground scrap after being filled from an overhead pipe. The fork truck will transport the skid-bin to a trailer train (Figure 2) and load it aboard for transport to mixing mills. Another fork truck will remove the bin at the trailer train terminus, transport it to process machines, and position it for emptying. The bottom of this bin swings downward about the back edge to pour the contents into mill hoppers without tipping the bin or scooping out the contents.

Figure 6 shows a special Yale & Towne truck which has been assigned to the Maintenance Department. This truck is equipped with a winch and cable and sheave arrangement to pull heavy machine parts onto the platform

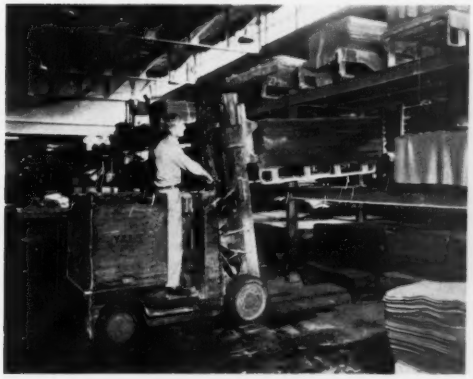


FIG. 4—Special three-layer structural steel racks at the Willoughby plant permit high stacking of skid loads of rubber. Stock stands here for 24 hours.

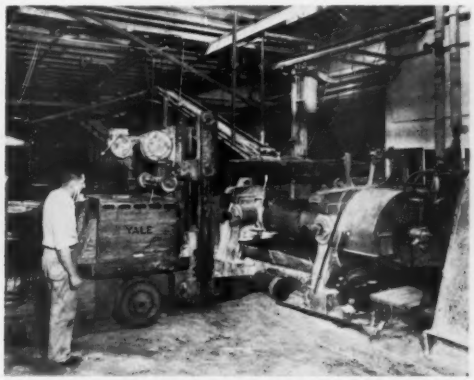


FIG. 6—This truck is equipped with a winch and cable and sheave arrangement to pull heavy machine parts onto the platform of the truck.

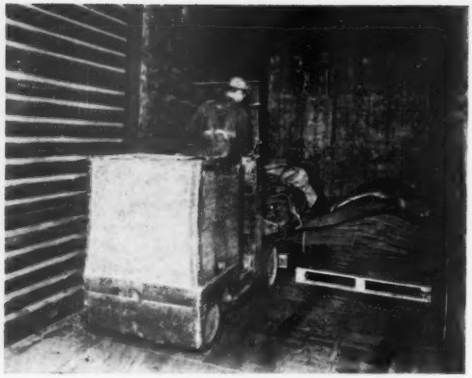


FIG. 7—Palletized loads being placed in a freight car for shipment. The pallets are constructed to enable two of them to be placed side by side.

of the truck. This truck alone has saved countless hours in dismantling and installing equipment for maintenance checkup, repairs, and installation. The truck easily lifts and transports heavy awkward pieces which would otherwise require special rigging and scaffolding and extra hours of strenuous manipulation by physical exertion.

Figure 7 shows palletized loads being placed in a freight car for shipment. Pallets are constructed of a size that will permit two pallets to be placed side by side in the freight car. The rubber goods are palletized as they leave the production line and travel on pallets through inspection, temporary storage, and shipping without being handled other than by fork truck.

Ohio Rubber has recently instituted a program to decrease maintenance costs. Insofar as the industrial trucks are concerned, an effort is being made to determine accurately the present maintenance costs and at the same time decrease this cost. Towards this end, trucks have been equipped with engine hour meters. After every 100 hours of operation, trucks are brought in for a checkup. In addition, and regardless of the hour meter reading, trucks receive a brief checkup once a week, and every six weeks receive a complete checkup. Parts which experience has shown to be most often needed are carried in stock.

When a driver turns his truck in at the end of the shift, he submits a report as indicated in Figure 8. He checks the listed items as "OK" if it is working properly and "NR" if repairs are needed. The driver signs the card and turns it over to the foreman who decides whether the truck should be taken in for repairs or continued in use.

The six weeks over-all maintenance checkup covers a total of 38 different points. The points to check will, of course, depend on whether the truck is gasoline, electric, equipped with hydraulic mechanism, etc. By having a complete check list it is difficult for maintenance men to skip checking any part. The check form has a space titled "work done" in which the mechanic is required to make a note of whatever work he does on each of the 38 points.

This new system of scheduling maintenance procedure, rather than waiting until a truck is down, until production schedules permit, or until a mechanic has time, has already cut truck maintenance and repair costs 30%. In addition, the schedule gives a control check on the garage which formerly was not available.

DRIVER CHECK CARD

Date_____ 19____ Truck No._____

1	2 O.K.	3		1	2 N.R.	3
			Motor			
			Clutch			
			Transmission			
			Universal Joint			
			Drive Axle			
			Brakes			
			Steering Axle			
			Steering Column			
			Hydraulic System			
			Mast			
			Carriage			
			Radiator			
			Horn			

Driver_____

O.K. for Use_____ Foreman

Remove for Repairs_____ Foreman

Remarks:_____

M-5701

FIG. 8—At the end of each shift drivers of the industrial trucks submit reports of this type. Foremen decide whether repairs are required or not.

Trucks are dispatched from a central Truck Department. Some operating departments are assigned trucks regularly; miscellaneous use is obtained by calling the Truck Department. The Truck Department is responsible for maintenance although other departments use the trucks. Another responsibility of the Truck Department is driver-training and safety. New drivers are carefully trained in truck operation; the Department not only promotes safe truck operation, but also promotes observation of safety precautions by plant personnel.

Eberbach & Son Co., Ann Arbor, Mich., has announced the **Instru-Mount**, a vibration damping, nonmagnetic base upon which the user can mount delicate mechanical, optical or electrical instruments. The unit measures 22 by 12 inches and weighs 50 pounds. The platform is 2½ inches thick. A ½-inch threaded insert at the rear center of the top enables the user to mount an entire apparatus assembly.

Designed for continuous service in installations where reliability and accuracy are essential, the **Gardsman Controller** (Model J), manufactured by the Taco West Corp., 525 North Noble St., Chicago 22, Ill., operates primarily in the control of furnace temperatures. It is, however, equally effective for the control of numerous industrial and laboratory processes.

Introduction of major changes in 12 models of its sit-down **Skylift (BF) Electrical Industrial Trucks** has been announced by the Automatic Transportation Co., 149 West 87th St., Chicago 20, Ill. The new models include changes providing longer life, greater operator comfort, reduced maintenance, and superior performance.

Compounding of Neoprene with Fine-Particle Silica

By RALPH F. WOLF and F. W. GAGE

Columbia Chemical Division, Pittsburgh Plate Glass Co., Barberton, Ohio

HI-SIL, the fine-particle silica pigment introduced to the rubber industry last year, appears to be of particular interest in neoprene compounding. As Hi-Sil is a very adsorptive pigment, it tends to retard cure in natural rubber and the general purpose synthetic rubbers as has been previously reported.* This problem does not arise when Hi-Sil is used in neoprene as there is, generally, no organic accelerator present to be adsorbed.

Hi-Sil is the first practical fine-particle silica pigment ever offered rubber compounders at a reasonable price. It is a hydrated silicon dioxide having a particle size of 0.025 micron measured by the electron microscope. This is approximately the same as that of easy processing channel black. The specific gravity of Hi-Sil is 1.95, lower than that of most silicas because of the presence of water of hydration. The refractive index of Hi-Sil is 1.42.

Comparative data show Hi-Sil to be definitely superior to Columbia's lower cost calcium silicate pigment, Silene EF, which until now has been one of the best non-black materials available for use in neoprene. Hi-Sil gives considerably higher tensile and hardness and much better tear resistance than Silene EF without any decrease in elongation. This is an indication of true reinforcement.

These characteristics naturally suggest usage of Hi-Sil in any neoprene application where properties approaching those of a black stock are required in a light colored compound. It is currently finding use in such neoprene items as colored specialty molded goods, light colored sheeting, colored jacket stocks for wire and cable, and roll compounds.

Hi-Sil also appears of interest as a replacement for zinc oxide in neoprene-natural rubber combinations which are being tested as white sidewall compounds by many tire companies. In this use, Hi-Sil contributes good stiffness to the uncured stock and good hot tear which prevents any tearing at the vents when the tire is removed from the mold. The cured sidewall containing Hi-Sil has very satisfactory buffing properties.

Hi-Sil containing compounds have been found to have good ozone resistance and excellent resistance to tearing, chipping and curb scuffing. The volume cost of Hi-Sil is only about one-third that of the zinc oxide which it replaces.

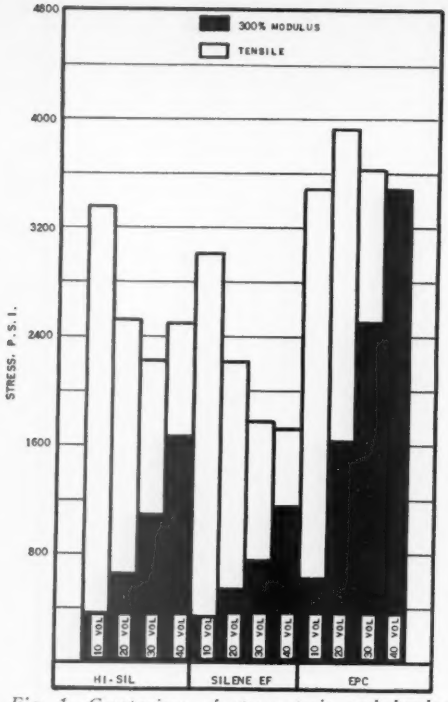
No unusual techniques need to be employed in mixing or curing Hi-Sil loaded neoprene compounds. The pigment mixes easily and disperses readily. Both Hi-Sil and Silene EF stocks are less scorchy than black except at 40 volume loadings. In making a direct comparison of 10, 20, 30 and 40 volume loadings of Hi-Sil, Silene EF and an EPC black the following recipe was used:

* "Compounding of Natural Rubber with a New Fine-Particle Silica," *R. A. (N. Y.)*, June, 1949; "Compounding of GR-S with a New Fine-Particle Silica," *I. R. W.*, August, 1949; "Compounding of Low-Temperature GR-S with a New Fine-Particle Silica," *I. R. W.*, March, 1950.

TABLE I—COMPARISON OF STRESS-STRAIN, HARDNESS, TEAR RESISTANCE AND MOONEY SCORCH OF HI-SIL, SILENE EF AND EPC BLACK AT 10, 20, 30 AND 40 VOLUME LOADINGS

Pigment	Loading (Vols.)	Cure at 287° F. (Min.)	Modulus 300%	Tensile	Elongation	Durometer Hardness	Tear (Lbs./In.)	Scorch Time (Min.)
Hi-Sil	10	15			Undercured			51
		30	200	2000	950	51	250	
		45	340	3130	920	56	280	
		60	370	3360	910	56	280	
		90	410	2850	820	58	240	
	20	15			Undercured			65
		30	310	1740	950	57	260	
		45	600	2520	830	64	410	
		60	650	2520	800	65	370	
		90	720	2650	750	66	360	
	30	15	720	1740	730	68	350	26
		30	1090	2220	680	76	540	
		45	1090	2260	700	77	490	
		60	1090	2170	670	78	470	
		90	1030	2210	680	79	420	
	40	15	1660	2500	580	83	620	(a)
		30	1630	2370	610	84	550	
		45	1530	2300	610	85	530	
		60	1550	2300	600	85	540	
		90	1530	2210	610	86	460	
Silene EF	10	15			Undercured			66
		30	110	820	780	47	180	
		45	300	2860	980	54	280	
		60	330	3010	940	56	270	
		90	380	2890	840	58	240	
	20	15			Undercured			58
		30	300	1560	880	56	290	
		45	480	2260	880	64	320	
		60	540	2210	830	66	310	
		90	570	2280	790	67	290	
	30	15			Undercured			29
		30	680	1790	800	70	340	
		45	750	1770	770	73	310	
		60	770	1760	730	75	300	
		90	790	1760	710	77	280	
	40	15	960	1670	690	76	390	2.5
		30	1150	1740	640	83	410	
		45	1160	1690	600	85	390	
		60	1130	1660	620	86	370	
		90	1120	1620	620	86	390	
EPC Black	10	10			Undercured			34
		15	260	2110	990	54	240	
		20	470	3490	910	56	340	
		30	610	3700	860	57	230	
		45	610	3490	820	58	300	
		60	680	3590	800	59	290	
		90	750	3570	760	60	240	
	20	10	360	1430	940	60	170	27
		15	880	2650	700	65	360	
		20	1290	3570	640	68	530	
		30	1430	3790	620	69	520	
		45	1630	3940	600	70	410	
		60	1720	3740	560	70	430	
		90	1760	4010	550	71	320	
	30	10	1090	2070	600	71	310	11
		15	1890	3150	500	74	560	
		20	2240	3520	490	76	560	
		30	2500	3630	430	78	420	
		45	2720	3630	390	79	400	
		60	2890	3800	370	81	380	
		90	3090	3800	340	81	360	
	40	10	1930	2380	440	83	380	14
		15	2880	3380	360	84	380	
		20	3110	3500	340	84	340	
		30	3490	3490	300	86	310	
		45	——	3560	290	86	330	
		60	——	3430	270	87	340	
		90	——	3560	250	87	330	

(a) Too stiff.



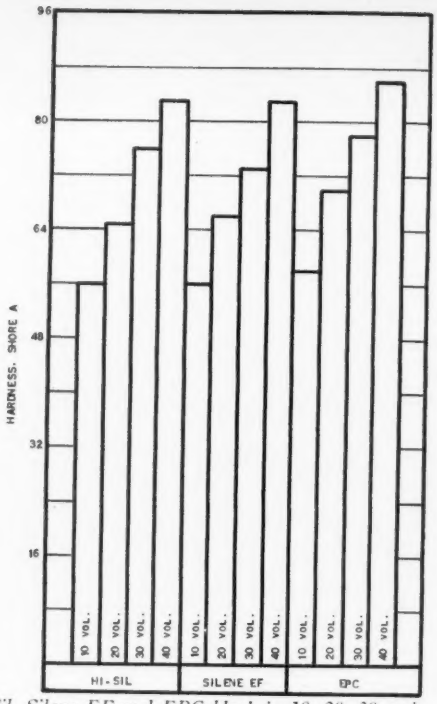
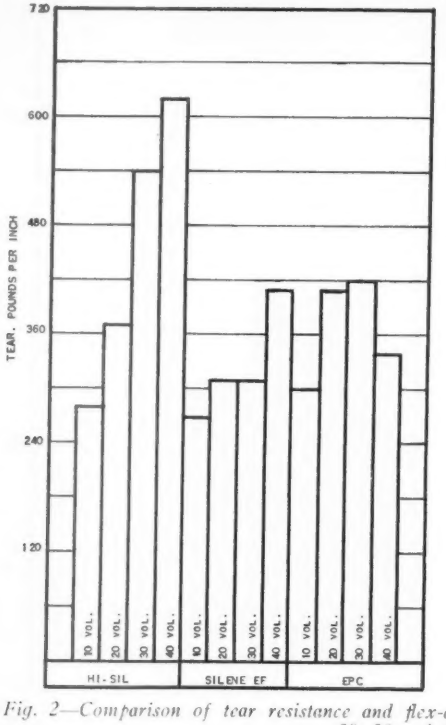


Fig. 1—Comparison of stress-strain and hardness of Hi-Sil, Silene EF and EPC black in 10, 20, 30 and 40 volume loadings.



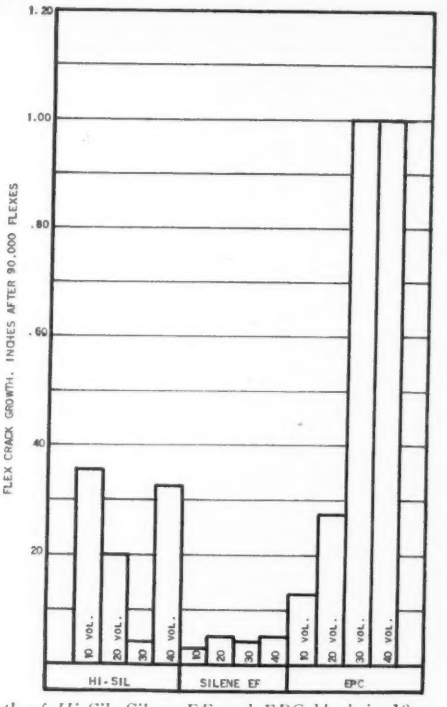


Fig. 2—Comparison of tear resistance and flex-crack growth of Hi-Sil, Silene EF and EPC black in 10, 20, 30 and 40 volume loadings.

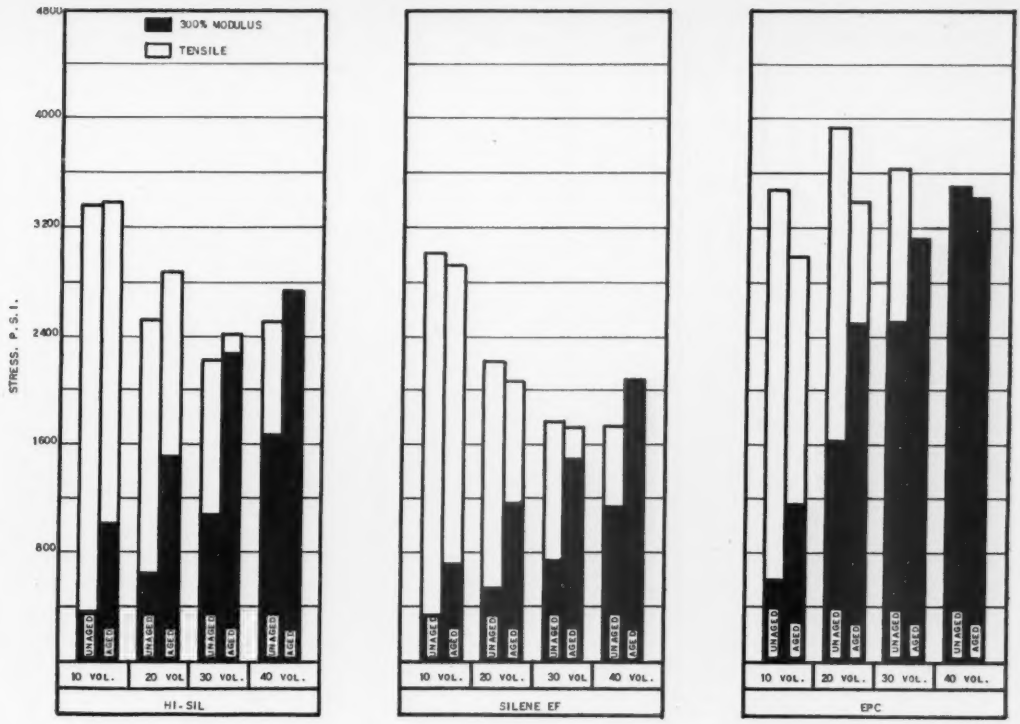


Fig. 3—Comparison of stress-strain of Hi-Sil, Silene EF and EPC black in 10, 20, 30 and 40 volume loadings before and after aging four days in air at 100° C.

Neoprene GN-A	100
Zinc Oxide	5
ELC Magnesium Oxide	4
Phenyl B-naphthylamine	1
Light Process Oil	10
Pigment	As Shown

Results of this comparison over a range of cures are shown in Tables I to V and a comparison of the optimum cures is presented graphically in Figures 1 to 5.

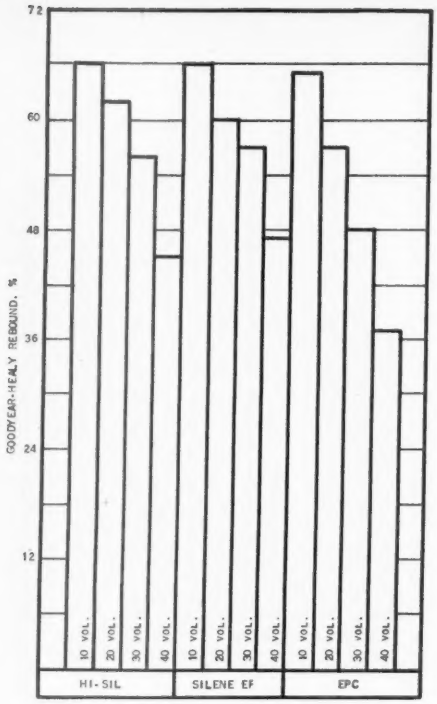
Table I and Figures 1, 2 and 5 give comparisons of stress-strain, tear resistance, hardness and scorch times; Table II and Figure 3 give results obtained after the samples were aged four days at 100°C.; Table III and Figure 4 compare percentage rebound and compression set; Table IV and Figure 2 illustrate comparative flex crack growth; and Table V and Figure 5 compare the water absorption properties of the three materials.

It will be seen from examination of Table I and Figures 1 and 2 that Hi-Sil consistently produces higher tensiles and tear resistance than Silene EF. Modulus of the Hi-Sil stocks is also considerably higher while elongation and hardness produced by the two materials are about the same.

The EPC black gives higher tensiles than Hi-Sil and somewhat higher tear at the lower loadings. At the highest loading it will be noted that the Hi-Sil stock has considerably better tear than the black. The black compounds have higher moduli in every case. Elongation of the black compounds falls off noticeably at the higher loadings, falling under 300 per cent at 40 volume load-

TABLE II—COMPARISON OF STRESS-STRAIN AND HARDNESS OF HI-SIL, SILENE EF AND EPC BLACK AT 10, 20, 30 AND 40 VOLUMES OVEN AGED FOUR DAYS AT 100° C.

Pigment	Loading (Vols.)	Cure at 287° F. (Min.)	Modulus 300%	Tensile	Elongation	Durometer Hardness
Hi-Sil	10	45	980	3660	720	67
		60	1010	3380	670	68
		90	950	3470	690	67
	20	45	1520	2640	600	78
		60	1530	2880	610	77
		90	1490	2670	590	77
	30	30	2260	2410	360	83
		45	2110	2340	400	84
		60	2070	2330	400	83
	40	15	——	2720	240	92
		30	——	2670	260	92
		45	——	2640	270	92
Silene EF	10	45	710	3220	720	66
		60	710	2920	680	66
		90	700	2790	660	65
	20	45	1160	2100	590	74
		60	1160	2060	580	75
		90	1160	2200	590	75
	30	30	1530	1700	400	80
		45	1490	1720	460	82
		60	1490	1630	440	84
	40	15	——	2240	260	87
		30	——	2080	260	89
		45	——	1900	260	90
EPC Black	10	20	1110	3230	640	66
		30	1120	3180	610	66
		45	1160	2990	580	66
	20	30	2500	3550	410	78
		45	2480	3390	400	78
		60	2600	3570	390	78
	30	20	3530	3530	300	86
		30	——	3110	250	86
		45	——	3490	270	87
	40	20	——	3230	200	93
		30	——	3420	200	93
		45	——	3020	160	94



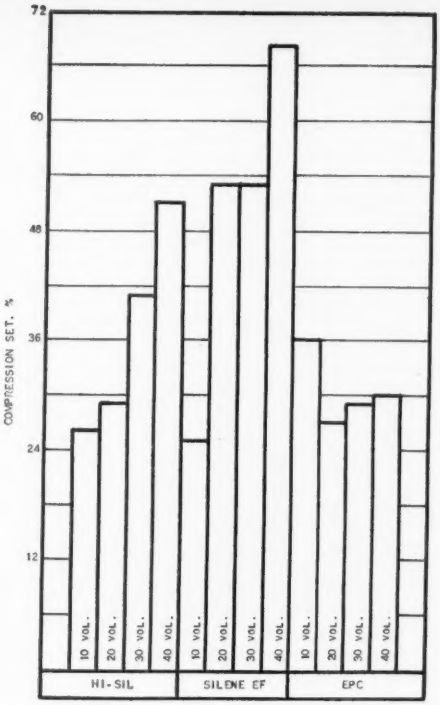


Fig. 4—Comparison of rebound and compression set of Hi-Sil, Silene EF and EPC black in 10, 20, 30 and 40 volume loadings.

TABLE III—COMPARISON OF REBOUND AND COMPRESSION SET OF HI-SIL, SILENE EF AND EPC BLACK AT 10, 20, 30 AND 40 VOLUME LOADINGS

Pigment	Loading (Vols.)	Cure at 287° F. (Min.)	% Rebound (Goodyear-Healy)	% Compression Set (Method B)
Hi-Sil	10	55	66.3	40
		70	61.8	31
		100	65.9	26
	20	55	56.1	55
		70	61.5	43
		100	60.6	29
	30	40	54.2	54
		55	56.3	46
		70	54.0	41
	40	25	43.7	63
		40	45.4	57
		55	40.7	51
Silene EF	10	55	66.0	60
		70	62.5	40
		100	62.8	25
	20	55	60.1	66
		70	59.5	54
		100	59.4	53
	30	40	53.4	70
		55	56.0	59
		70	57.0	53
	40	25	44.7	89
		40	46.5	81
		55	46.5	68
EPC Black	10	30	59.3	53
		40	61.0	46
		55	65.0	36
	20	40	56.9	39
		55	53.9	30
		70	54.3	27
	30	30	45.5	37
		40	47.6	32
		55	43.9	29
	40	30	33.5	38
		40	32.5	34
		55	36.8	30

TABLE IV—COMPARISON OF FLEX-CRACK GROWTH OF HI-SIL, SILENE EF AND EPC BLACK AT 10, 20, 30 AND 40 VOLUME LOADINGS

Pigment	Loading (Vols.)	Cure at 287° F. (Min.)	Flex Crack Growth—DeMattia (In./90,000 Cycles)
Hi-Sil	10	45	0.23
		60	0.36
		90	1.00 (after 63,000 cycles)
	20	45	0.05
		60	0.20
		90	1.00 (after 54,000 cycles)
	30	30	0.04
		45	0.12
		60	0.47
	40	15	0.33
		30	0.29
		45	0.36
Silene EF	10	45	0.02
		60	0.02
		90	1.00 (after 41,000 cycles)
	20	45	0.03
		60	0.05
		90	1.00 (after 54,000 cycles)
	30	30	0.02
		45	0.04
		60	0.30
	40	15	0.01
		30	0.05
		45	0.07
EPC Black	10	20	0.03
		30	0.08
		45	0.13
	20	30	0.65
		45	0.28
		60	0.85
	30	20	0.05
		30	1.00 (after 54,000 cycles)
		45	1.00 (after 80,000 cycles)
	40	20	1.00 (after 27,000 cycles)
		30	1.00 (after 31,500 cycles)
		45	1.00 (after 22,500 cycles)

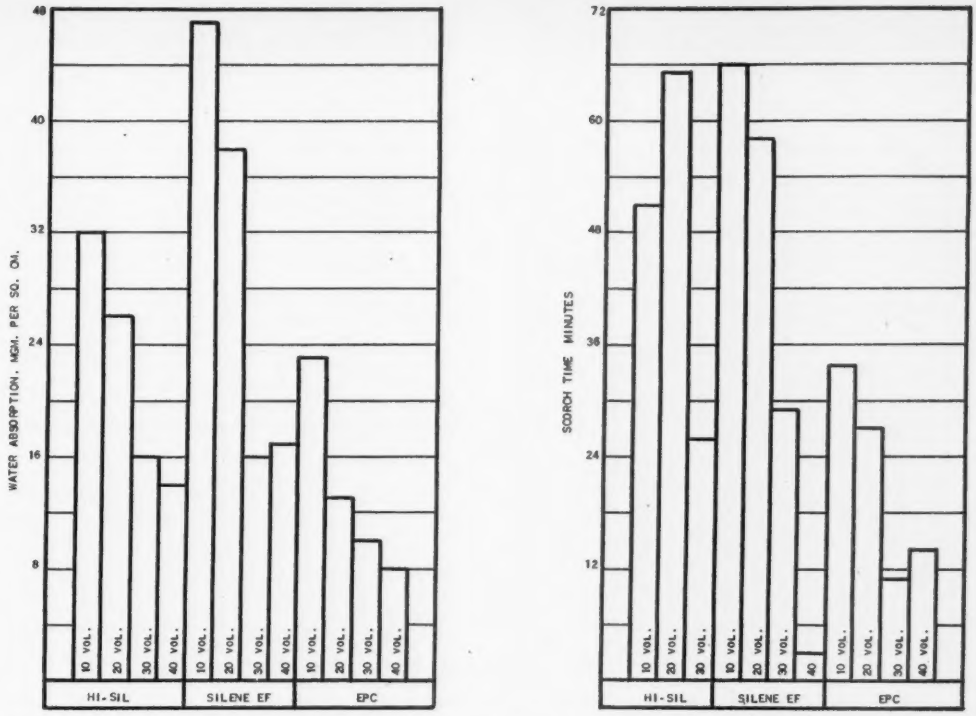


Fig. 5—Comparison of water absorption and Mooney scorch of Hi-Sil, Silene EF and EPC black in 10, 20, 30 and 40 volume loadings.

ing or less than half that of the Hi-Sil compound. Hardnesses of the compounds produced by the two pigments are about the same.

The three different compounds maintained the same relationships after aging for four days at 100°C. in a forced draft oven although Hi-Sil and Silene EF both showed better percentage retention of original tensile strength than did the black (Table II, Figure 3).

Hi-Sil and Silene EF show about equal rebound which is definitely higher than that of the black stock (Table III, Figure 4). Silene EF had the poorest compression set (ASTM Method B) of any of the three compounds. In this property, Hi-Sil was a little better than the black at 10 volume loading but definitely poorer at higher loadings.

Crack growth resistance of the three compounds was determined with a DeMattia flex machine using a one-inch stroke at 100°C. and measuring cracking in fractions of an inch after 90,000 flexures (Table IV, Figure 2). Crack growth resistance of the Silene EF stocks was excellent at all loadings. Resistance of the Hi-Sil compounds was also very good. The black compound had good flex resistance only at 10 volume loading. At 20 volume it was poorer than either of the non-black materials and at higher loadings it cracked completely across in less than 90,000 flexures.

Water absorption tests were run for 14 days at 70°C. and the results are reported in milligrams of water absorbed per square centimeter of surface (Table V, Figure 5). The black compound had the lowest water absorption and Silene EF the highest with Hi-Sil midway between. These results are the same as those obtained in natural rubber and GR-S.

Although the use of diethylene glycol, or similar material, is almost essential in GR-S stocks loaded with Hi-Sil or Silene EF, and is also helpful in speeding up cure in natural rubber, its use does not appear desirable in neoprene unless increased hardness is sought. Table VI shows that use of 6 per cent glycol based on the pigment retards cure, reduces tensile strength, modulus and tear resistance, but increases hardness.

Curing time of a Hi-Sil loaded neoprene stock can be greatly reduced or the curing temperature lowered by

TABLE V—COMPARISON OF WATER ABSORPTION OF HI-SIL, SILENE EF AND EPC BLACK AT 10, 20, 30 AND 40 VOLUME LOADINGS

Pigment	Loading (Vols.)	Water Absorption (mg./cm.²)
Hi-Sil	10	32.0
	20	26.4
	30	15.7
	40	14.3
Silene EF	10	47.1
	20	37.9
	30	15.7
	40	16.5
EPC Black	10	22.5
	20	12.9
	30	9.7
	40	8.3

TABLE VI—EFFECT OF DIETHYLENE GLYCOL ON NEOPRENE COMPOUNDS CONTAINING HI-SIL OR SILENE EF

Recipes

	A	B	C	D
Neoprene GN-A	100	100	100	100
Zinc Oxide	5	5	5	5
ELC Magnesium Oxide	4	4	4	4
Hi-Sil	58.5	58.5	—	—
Silene EF	—	—	63	63
Phenyl B-naphthylamine	1	1	1	1
Light Process Oil	10	10	10	10
Diethylene Glycol	—	3.5	—	3.8

Compound	Cure at 287°F. (Min.)	Mod. 300%	Tensile	Elongation	Durometer Hardness	Tear (Lbs./Inch)
A	15	820	1890	850	64	370
	30	1080	1770	540	70	500
	45	1120	2260	760	71	510
	60	1120	1870	620	71	540
B	15			Undercured		
	30	370	1820	960	67	340
	45	600	2100	810	73	380
	60	670	2070	810	78	320
C	15	440	1120	780	61	160
	30	960	1900	740	69	370
	45	990	1730	640	71	400
	60	980	1650	590	71	350
D	15			Undercured		
	30	500	1730	850	70	280
	45	600	1670	740	76	300
	60	650	1550	690	77	300

TABLE VII—EFFECT OF PERMALUX ON LOW TEMPERATURE CURE OF A NEOPRENE JACKET COMPOUND CONTAINING 30 PPH HI-SIL

Recipes

	E	F
Neoprene GN-A	100	100
Zinc Oxide	5	5
ELC Magnesium Oxide	4	4
Hi-Sil	30	30
Titanium Dioxide	2	2
Agerite Stalite	2	2
Light Process Oil	5	5
Petrolatum	2	2
Paraffin	2	2
Stearic Acid	1	1
Permalux	—	2

Compound	Cure at 270°F. (Min.)	300% Mod.	Tensile	Elongation	Durometer Hardness	Tear (Lbs./Inch)
E	60			Undercured		
F	15	500	2610	830	61	330
	30	820	3090	740	66	270
	45	840	2670	670	66	250
	60	780	2580	650	67	250

use of two parts of Permalux in the compound. This may be of importance where relatively low curing temperatures are desired as in curing sheeted goods or in curing cable jacket stocks over an already cured core compound. The effect of Permalux on the cure of a typical 30 PPH Hi-Sil jacket compound is shown in Table VII.

Attempts to improve further the resilience of Hi-Sil loaded neoprene compounds have not been successful. Although ten PPH of trichlordiphenyl ether (Dow 3X), chlordiphenyl (Aroclor 1242), or dibenzyl ether increased rebound by a few per cent the improvement was not enough to justify the added cost. Plasticizer SC had almost no effect while dibutyl sebacate, tributoxy ethyl phosphate and Paraplex AL 111 actually decreased the percentage rebound.

Use of Hi-Sil is reported to improve the adhesion of neoprene compounds to metal. This has not been checked in our laboratory. Use of Silene EF for this purpose is, of course, quite common. We would not expect Hi-Sil to be as good an acid acceptor as Silene EF and the latter pigment is probably more effective in cement applications where this property is needed to prevent tendering of fabric or other materials.

New Development Reduces Cost of Producing Dies

MAJOR efforts are being made in the aircraft industry to reduce the cost of tooling to produce new types of planes. In discussing these efforts at the recent meeting of the American Society of Tool Engineers in Philadelphia, Penna., R. B. Schulze, general supervisor of manufacturing research for the Glenn L. Martin Co., revealed details of a new development in making dies which is claimed to cut die cost just about in half. The process is said to combine the high production capacity and accurate forming ability of conventional steel dies with the low cost of easily and quickly fabricated dies made of rubber.

Use of rubber in die construction first came in a number of years ago to provide quick low cost tooling for short runs. The process did not lend itself as well to the higher production levels now reached at times in the aircraft industry. It also did not work out too well when the metal had to be "stretched" in forming it, as so often is required.

The new half-steel half-rubber die construction is said to overcome these difficulties. Time required to set up machines for use of these dies is claimed to be negligible. In many cases the new dies are said to be providing better ability to "stretch" metals to desired shape than steel dies. The rubber apparently provides a cushion which enables metal to be drawn some 50% deeper than with steel dies. An important advantage of this development is that it may eliminate multiple operations in forming of metal parts.

From a safety standpoint the dies are also claimed to enable drawing of metals to more uniform thickness. The dies have already been used for a number of different materials including sheet steel up to 1/10th inch thick, and aluminum up to 5/8 inches thick. An interesting finding also was that the sheet metal could frequently be coated with finishes such as vinyl plastics and some paints before drawing without injuring the finish.

Introduction of a new, fast cycling type of hand-operated valve which provides 4-way directional air control for the operation of single or double acting pneumatic cylinders and other air-operated equipment has been announced by the Hannifin Corp., 1151 South Kilbourn Ave., Chicago 24, Ill. Designated as Model NHS, the **Hannifin Air Valve** provides what approximates "push button" control with physical effort reduced to a minimum.

Editorials. . .

Pending Legislation

WITHIN the next two weeks a decision will be reached on rubber legislation. The House has already passed the so-called Vinson Bill, which extends the Rubber Act of 1948 for a three-year period without any major changes. At this writing, a Senate Armed Services Subcommittee, headed by Senator Johnson (Dem., Texas), is holding public hearings on rubber policy and has already heard testimony from both administrative and industrial officials, with a long list of witnesses still to be heard. The hearings are largely "window dressing" since there is little doubt that the Senate will go along with the House on the Vinson Bill, although a compromise may result in extension of existing legislation for a two-year rather than a three-year period.

Industry executives, for the most part, repeated testimony already presented at hearings sponsored by the House Armed Services Committee at the Senate hearings. The three basic plans for modifications in existing legislation, previously outlined and discussed in these columns, were again presented, although officials of the Rubber Manufacturers Association did not testify. A few voices were raised in favor of the Bricker Bill, which would require the government to offer its synthetic rubber production facilities for lease and which would substantially reduce the mandatory use requirements. Most of the testimony was for the records only.

The fact that the Senate hearings were held in the midst of a spiraling price market for natural rubber led some of the witnesses to expound their ideas on methods of controlling that situation. These witnesses took the position that since the government controlled the synthetic rubber program and was obviously intent on continuing that control for a period of years it should act in the interest of the nation and national security. For example, P. W. Litchfield, board chairman of Goodyear, suggested that the production of GR-S be stepped up from its present 28,000 long tons of monthly output to 50,000 long tons and, further, that the national inventory of finished GR-S be built up to 200,000 long tons. These two steps, he stated, would remedy a serious and acute current situation and at the same time accomplish a greatly needed improvement in national security. The current short supply of synthetic rubber is seriously inconsistent with other moves designed to protect the country in case of aggression.

John L. Collyer, president of Goodrich, took the opportunity to emphasize the importance of his recently suggested three-point program to guarantee America's national security (full details of which will be found elsewhere in this issue). This program calls for operating general-purpose synthetic plants at maximum capacity, re-examination of stand-by facilities to make certain that additional supplies can be made available in a minimum of time, and reactivation of at least one stand-by plant to determine by actual experience how long it would take such a plant to reach capacity output under emergency conditions. RFC officials have indicated that it would cost between $200,000 to $300,000 to reactivate a stand-by plant.

All of the side-line suggestions presented at the hearings will be given due consideration by proper authorities in due time, but it is doubtful whether rapid action on any of them will be taken, although RFC officials have already taken steps to increase monthly production of GR-S to a figure approximating 35,000 long tons. The point is that the rubber manufacturing industry must become reconciled to living with present rubber legislation for another two or three-year period. Since the law has proved to be workable and equitable this should not prove difficult, but the fact that disposal of the synthetic rubber producing facilities is being put off for another period of time will delay by that much time the inevitable show-down between synthetic and natural rubber.

Rubber Prices

THE PRICE of natural rubber is still spiraling at this writing, continuing a trend started over a month ago. Malayan rubber trade authorities attribute the situation to four main factors: (1) Heavy Russian buying; (2) Shortage of physical rubber; (3) Huge stocks bottled up in Indonesia; (4) Strip tapping in Malaya. According to these authorities no rapid decline in prices is seen for the immediate future unless one or more of the following actions is taken: (a) A sizeable increase in production of synthetic rubber in the United States; (b) Early clarification of Indonesian policy on currency devaluation, thus facilitating clearance of accumulated stocks, reported in some quarters to approximate 70,000 tons; (c) Disposal of a substantial tonnage of rubber by the London Board of Trade which was purchased in Malaya in 1946. Because of factors outlined in this column last month we still feel that a price-break is due shortly, and that a drop of about 10 cents a pound would not be surprising.

CURRENT NEWS OF THE MONTH

LOS ANGELES HEARS DINSMORE ON RUBBER INDUSTRY PROSPECTS

The May 2 meeting of the Los Angeles Rubber Group, held at the Mayfair Hotel in Los Angeles, Calif., was addressed by Dr. R. P. Dinsmore, vice-president in charge of research and development for the Goodyear Tire & Rubber Co. Dr. Dinsmore spoke on "Rubber Prospects," in which he reviewed conditions and trends of the post-war years and their influence upon the future of the rubber business.

He noted that the political turmoil which has existed since the end of the war with Japan has exceeded the expectation of most people. The resulting continued diversion of wealth and manpower all over the world to military purposes is a factor which makes the analysis of industrial trends difficult, if not impossible.

Some of the potential new uses noted for rubber in previous years, notably latex sponge and the almost complete equipment of farm machinery, earth-moving and road-building devices, are exceeding expectations. Others, such as rubber suspensions for automobiles and the use of rubber as a chemical raw material, have not developed. To a considerable extent, the latter use has been replaced by special synthetic polymers made from the same monomers used for GR-S.

Another potential use of rubber which may prove to be of great importance is the combination of rubber powder with road asphalt as a means of making road surfacing more durable. Five to ten per cent of rubber in the asphalt increases shock resistance, lowers the brittle point and raises the softening point of the asphalt. It also tends to prevent bleeding to the surface of light petroleum fractions which make a treacherous driving surface when wet.

The fact that we have been running above normal consumption, as judged by experience from 1914 to 1940, does not necessarily lead to the conclusion that we are due for a period of subnormal activity, Dr. Dinsmore said. The figures show that from 1940 to 1949, world excess use is about 650,000 tons, of which this country accounts for about 450,000 tons. It is quite possible that the line of normal increase is changing its slope because of new rubber uses in this country and more industrialization abroad. Certainly, in the past two years foreign uses have again approached the 50% figure which they maintained before the war, while we have kept at a fairly constant level.

It would appear that we might expect a continued consumption of rubber in this country of a million tons a year or slightly higher for several years to come. A protracted depression would alter this situation, but no evidences of it are in sight. Foreign consumption should be about 900,000 tons this year, with an expected annual increase of 25,000 to 50,000 tons for the next two or three years.

The potential production of natural rubber, which is estimated at about 1,900,000 tons, has never been realized since the war. The past two years it has averaged 1,500,000 tons, with a slight drop in 1949. The political situation in Indonesia is responsible for much of the deficit and there is not much reason to expect improvement in the near future.

An increased output of 75,000 tons is as much as can be expected and circumstances might easily change this to a decrease. Stocks of rubber are about 750,000 tons divided nearly equally between producing countries, stocks afloat, and consuming countries. This does not include our Government stockpile, figures for which are not published, but this is believed to be considerably below the desired objective.

Safeguard for the Future

Dr. Dinsmore stated that the greatest safeguard for the future of any industry is the expansion in demand for its products because of decreasing costs. The rubber growers, as a group, failed to recognize this truth in the pre-war years, but worked on the basis of restricted output. Their future opportunities in that direction are not clear. It is to be hoped that international unrest may soon diminish to the point that a freely competitive rubber industry may soon become possible.

Back Issues Wanted

Because of exceptional demand, copies of the January, February, March and April, 1950, issues of RUBBER AGE are completely out of stock. We are still receiving requests for these issues and would like to fill such requests, particularly from people who need the issues to complete bound volumes. Accordingly, the cooperation of subscribers in returning any of these issues which can be spared will be appreciated. A credit of 35 cents will be given for each copy returned. Please send them to: Subscription Department, RUBBER AGE, 250 West 57th St., New York 19, N. Y.

RUBBER ACT EXTENSION APPROVED BY HOUSE OF REPRESENTATIVES

By a unanimous voice vote on May 19, the House of Representatives approved the measure to extend the life of the present Rubber Act for another three years. Representative Vinson (Dem., Ga.), author of the bill, called for its passage by restating his belief that rubber supplies could be cut off again by the cold war and the spread of Communism in the Far East. The Federal Government, he warned, must hold onto the synthetic rubber program to prevent any such eventuality.

Representative White (Idaho, Dem.), cautioned against draining the nation's petroleum reserves by the continued heavy peacetime use of synthetics which is made of compounds extracted from oil. But Representative Hoffman (Rep., Mich.), pointed out that this would not happen since the same compounds can be made from a variety of agricultural products, such as potatoes. Synthetic rubber, Mr. Hoffman said, has made our people independent of the so-called British-Dutch-French rubber trust.

The extension legislation now goes to the Senate where a slightly different rubber proposal is also pending. This bill was drawn up by Senator John Bricker (Rep., Ohio), and calls for federal ownership of the synthetic plants, but would put their operation in the hands of industry, subject to loose controls. Senator Lyndon Johnson (Dem., Tex.), has announced that the Senate Armed Services Rubber Subcommittee had scheduled hearings on rubber policy legislation for June 5. Other members of the subcommittee are Senators Lester Hunt (Dem., Wyo.), and Leverett Saltonstall (Rep., Mass.).

Undersecretary of Commerce Thomas C. Blaisdell was scheduled to present the Administration's case for authority to sell or lease synthetic rubber plants to private industry. He was to have asked for more flexible control authority over the use of synthetic rubber than the present law which the House extended for three years.

Virtually the same lineup of industry witnesses who testified at House hearings in February will appear before the Senate group. The Administration will be followed by these witnesses at as yet undesignated dates:

R. C. Jopling (Phillips Petroleum), Stanley C. Hope (Esso), G. M. Tisdale (U. S. Rubber), A. L. Grant and H. E. Poel (Rubber Trade Association), P. W. Litchfield (Goodyear), John L. Collyer (Goodrich), Harvey S. Firestone (Firestone), A. N. Freedlander (Copolymer), and William O'Neil (General Tire).

POSSIBILITY OF RUBBER CRISIS IS OUTLINED BY GOODRICH HEAD

In an interview at the company's offices in New York on May 16, John L. Collyer, chairman and president of the B. F. Goodrich Co., made public a study of the factors threatening a possible new crisis in rubber and recommended that the government take action immediately because of the unsettled conditions in the Far Eastern rubber-growing areas.

Mr. Collyer, wartime special director of rubber programs, urged immediate adoption of a three-point program to "protect American consumers and others throughout the rest of the free world against economic repercussions that may be caused by Communist-inspired stoppages in the supply of the vital material—rubber."

Emphasizing that American industry and transportation already have the safeguard contained in this country's warborn manmade rubber industry, Mr. Collyer said that "we must determine how much time will be required to get an inactive rubber-making plant into operation, and the best time to find that out is now, before we are in an emergency." He added that "the foundation of our entire National Defense structure is a strong domestic economy which is not possible without an adequate supply of rubber."

In his analysis of the national and world rubber situation—the twelfth in a series of studies Goodrich has issued since July, 1940—Mr. Collyer said that the "Communist threat to the economic disruption of these Far Eastern lands is far more serious today than was the Japanese menace, as most Americans viewed it, in 1940." He made the following recommendations for consideration by the government:

Outlines Three-Point Program

(1) Maximum production of American-made rubber in all plants now operating. Mr. Collyer said that this action would assure sufficient rubber for current requirements and would provide a stockpile of American-made rubber large enough to make up for any shortage that might be created if the U. S. were suddenly cut off from its Far East crude rubber supply. This action, he said, also "will protect American consumers and others throughout the world against economic repercussions caused by Communist-inspired stoppages in the supply of rubber."

(2) Re-examination of the plans for reactivating the standby or inactive facilities for the production of American-made rubber to make certain that additional supplies can be made available in a minimum of time. (At present, a little less than 40 per cent of the facilities are in operation). He explained that this step would involve setting up a program for placing the inactive plants in condition, for reactivating the plants which supply the materials for making rubber, for handling conflicts between the rubber industry and others which need the same materials, for arranging contracts, and for assembling trained personnel to carry on the complicated manufacturing processes.

(3) Reactivation, now, of one inactive American rubber-making plant to insure that sufficient quantities of rubber will be available, and to determine by actual experience the time which would be required to attain capacity output under emergency conditions. "This," he said, "goes to the heart of the danger inherent in all standby situations. If we must take the fire hose down from the wall, we want to be sure it does not leak. The only way we can be sure is to test it." In this connection he added the following:

"The American people are paying taxes to defray the expenditure of 14 billion dollars for national defense this year. This fact alone underscores the gravity of the world situation. The United States is straining its financial resources to guarantee the freedom and security of its people and of other peoples whom we are aiding to withstand the assaults of Communism.

"We learned, once before, that rubber can be America's Achilles heel. We have a rubber insurance policy that we believe is sound. It is sound in theory—in standby. Action taken now to prove it sound, by test, might well prove to be the most economical program the American people have ever underwritten. Right now we need assurance that no development—in the Far East, or arrived at in conferences—will cause America's economic system to sputter or stall for want of rubber."

Mr. Collyer reminded that in 1940 the United States and other freedom-loving nations were placed in a critical situation by the International Rubber Regulation Plan, a cartel approach to influence crude rubber prices.

"It was not merely that American consumers paid many millions of dollars more for all of the products in which rubber was used," he said, "but more serious was the impact of this rigid agreement upon military security. So inflexible were the operations of this regulatory plan that in 1940, after war in Europe had started and when the United States was engaged in an all-out endeavor to build its defenses, our country's efforts to obtain adequate rubber supplies were hindered by restriction of rubber production.

"The proposed Havana Charter for an International Trade Organization, now being considered by Congress, would, in my opinion, encourage formation of the same type of cartels that have in the past restricted crude rubber production, raising prices and retarding the normal increase of rubber consumption."

Foam Unit at Woonsocket

U. S. Rubber Co. has announced plans for setting up its eastern manufacturing center for latex foam sponge products, including mattresses, at its Woonsocket, R. I., plant. A new unit is being constructed which will employ approximately 300.

TESTIMONIAL LUNCHEON TENDERED FRANK MALM BY DuPONT GROUP

Among those present at the testimonial luncheon to Frank Malm were the following: Bottom Row—Mike Seventko (Okonite), Jim Boyle (N. J. Wood Finishing), Mr. Malm, Pete Murawski (DuPont), Mel Lerner (Rubber Age); Middle Row—B. S. Biggs (Bell Telephone Labs.), Ed Youmans (Okonite), Rudy Schatzel (Rome Cable), Al Northam (DuPont), C. A. Bartle (DuPont); Top Row—C. V. Lundberg (Bell Telephone Labs.), H. J. Peters (Bell Telephone Labs.), Grover Brown (Okonite), Joe Fuller (DuPont). The photograph was taken by George Vacca (Bell Telephone Labs.).

A testimonial luncheon to Frank Malm, who officially retires from the Bell Telephone Laboratories on July 1, after 44 years and five months of continuous service, was given by the DuPont Rubber Chemicals Division on June 1. The luncheon was held at the Charles French Restaurant in New York City, with Pete Murawski acting as host. Mr. Malm, who became 65 years of age on June 14, was retired under the compulsory retirement system in effect at the Bell Laboratories. His future plans will be announced shortly.

RUBBER STUDY GROUP HOLDS SEVENTH REGULAR MEETING AT BRUSSELS

The Seventh Meeting of the Rubber Study Group held in Brussels, Belgium, ended on May 5, 1950. The meeting was attended by delegations from Australia, Belgium, the British colonial and dependent territories, Burma, Canada, Ceylon, Denmark, France, Hungary, Italy, Liberia, the Netherlands, Thailand, the United Kingdom, the United States of America and the United States of Indonesia, and by observers from the Food and Agricultural Organization and from the International Rubber Development Committee. Mr. Willis C. Armstrong, Associate Chief of the Economic Resources and Security Staff, State Department, headed the United States delegaion.

The official summary of the meeting, as issued by the U. S. State Department, follows:

The principal objects of the meeting were: (A) To review the world rubber situation and bring up-to-date the statistical calculations published by the Group after its Sixth Meeting in the spring of 1949; (B) To consider measures designed to expand world consumption of rubber; (C) To consider the possibility of improving the systems of packing and marketing rubber.

World Statistical Position

The Group examined the world statistical position and made estimates for natural rubber production and for consumption of natural and synthetic rubber during 1950. It was estimated that the world production of natural rubber would be in the neighborhood of 1,605,000 long tons, while consumption of natural and synthetic might be in the neighborhood of 1,465,000 and 460,000 long tons, respectively. These figures for consumption make no allowance for additions to governmental or commercial stocks. Tables giving the estimates made by the group are reproduced herewith.

The Group also considered the world statistical position of natural rubber latex, and estimated that world production in 1950 might be of the order of 100,000 long tons (dry rubber content) while consumption might be in the neighborhood of 85,000 to 90,000 long tons (dry rubber content). The figures for natural rubber latex production and consumption are included in the estimates given for world production and consumption of natural rubber.

At the Meeting all delegations were given an opportunity to present statements and to ask questions of one another. Among the subjects to which attention was drawn were the present position of the producers of natural rubber and social and economic conditions in their countries, recent economic and technical developments in the natural and synthetic rubber industries, the grading and packing of natural rubber, the position of the reclaimed rubber industry and the costs and prices of all types of rubber.

World Rubber Consumption

The Group continued its policy of examining means for encouraging the expansion of the world consumption of rubber. The Group recognized that a great deal of valuable development work on existing rubber products was being done throughout the world, and considered that the most immediate large scale increase in consumption of rubber would be achieved by an intensification of this work, particularly in certain fields.

The group emphasized the importance which is attached to the speedy application of the results of research into new uses of rubber. In this connection, the Group paid tribute to the work on the International Rubber Development Committee in promoting and expanding the production and sale of rubber and rubber products of all types.

The Group considered that the following fields presented the most fruitful opportunties for development in the usage of rubber either in dry or latex form:

(A) Latex foam especially for upholstery purposes in transportation industries, in public buildings and in the home;

(B) Road construction and surfacing, subject to further experimentation and testing;

(C) Tires and other rubber products, such as rubber bonded metal, in railways, mining, agriculture and the engineering industry.

Export-Import Arrangements

The Group arranged for the necessary cooperation between exporting and importing countries to enable representative type samples of natural rubber again to be available at an early date, relating these in the first place to the character of supplies now coming forward.

The Group gave a general welcome to the French proposals for the developments of specification rubbers at no premium as holding out the prospects of a substantial step forward in the marketing of rubber, according to uniform technical specifications of maximum value of rubber manufacturing industries, and it was agreed that producing countries should supply specification rubbers in sufficient quantity to enable manufacturers to report upon their value to them. The cooperation of manufacturers has been assured in the necessary interchange of technical information under the aegis of the International Rubber Research Board.

British colonial and dependent territories, Ceylon, France, Netherlands, United Kingdom, United States of America and the United States of Indonesia were elected as members of the management committee.

The Group accepted the invitation of the Italian Government to hold its next meeting in Rome. The date of the meeting will be decided by the management committee in consultation with the inviting government.

TABLE I—ESTIMATED NATURAL RUBBER PRODUCTION IN 1950
(In 1,000 Long Tons)

Malaya	685
Indonesia	520
Ceylon	95
Indochina	45
Thailand	92
British Borneo	64
Burma	10
Liberia	30
Other Countries	64
Total	1,605

TABLE II—ESTIMATED NATURAL AND SYNTHETIC RUBBER CONSUMPTION IN 1950
(In 1,000 Long Tons)

Territory	Natural	Synthetic*	Total
USA	600	425	1,025
UK	195	3	198
Belgium	11	(A)	11
Denmark	5	(A)	5
France	92	8	100
Italy	37	3	40
Netherlands	13	(A)	13
Australia	26	(A)	26
Canada	37	17	54
Other Countries	449	4	453
Total	1,465	460	1,925

* Excluding Russian-produced synthetic rubber.
(A) A small amount of synthetic rubber is expected to be used.

Carcass Stock Synthetic Rubber

The development of a modified synthetic rubber which may prove completely satisfactory for use in tire carcass stocks was indicated by Professor Carl Shipp Marvel, head of the department of organic chemistry in the University of Illinois, at a dinner held in Chicago on May 19. The Willard Gibbs Medal of the Chicago Section of the American Chemical Society was presented to Dr. Marvel at the dinner. In his medal address, Dr. Marvel stated that the new polymer, made of butadiene and styrene with sodium used as the catalyst, showed the lowest heat build-up of any of the present synthetic rubbers "and is approximately equal to natural rubber in this respect." Preliminary tests indicate that the polymer may prove to be a useful carcass stock rubber.

Waldron Acquires Meadows Machine

The John Waldron Corporation, of New Brunswick, N. J., has announced the acquisition of the business of the Meadows Machine Works, of South Kearny, N. J. Both concerns have long been engaged in the manufacture of machines used in the converting of paper, textiles, plastics, etc., and the products of both are in wide use in all major industries for web processing operations at high production rates. The various Meadows units will henceforth be sold by the Meadows Machine Division of the John Waldron Corp. Mr. Cullen, founder and general manager of the Meadows concern, has joined the Waldron organization in an official capacity.

RUBBER FOOTWEAR PRODUCERS EXHIBIT AT POPULAR SHOE SHOW

The 1950 Popular Price Shoe Show of America, generally known as the official volume show of the shoe industry, was held from May 14 to 18 at the Hotels New Yorker and McAlpin in New York City. The show was jointly sponsored by the New England Shoe and Leather Association and the National Association of Shoe Chain Stores. According to a consensus of the exhibitors, business was quite satisfactory.

As usual, a large number of rubber manufacturers exhibited their wares. Among those showing staple lines of rubber footwear, including boots, rubbers and tennis shoes, were the Bata Shoe Co., Bristol Manufacturing Co., Cambridge Rubber Co., Converse Rubber Co., Gold Seal Rubber Co., Goodyear Footwear Corp., La Crosse Rubber Works, Servus Rubber Co., and the Tyer Rubber Co.

The Cambridge Rubber exhibit included improved designs of the company's Stadium, Sun Valley and Lake Placid boots. These boots are now furnished with cork-rubber soles, feature 100 percent wool, and are available in at least seven colors. Another new number was the "Texo" boot for children, featuring "horns" extending over the top of the boot. The Tyer Rubber exhibit included the "Little Leaguer" baseball shoe, with a cleated sole molded of rubber. It is said to have all the good features of a leather baseball shoe at a canvas shoe price. Hopalong Cassidy boots were a feature of the Gold Seal Rubber exhibit.

Other Items on Display

Specialty rubbers were displayed by the So-Lo Marx Rubber Co. and the Tingley-Reliance Rubber Corp. So-Lo Marx showed a new line of moccasin "totes" for boys, girls and toddlers, all hand laced, light weight and washable. Water-fun "totes" were also displayed, an improved feature being self-tightening tops. These "totes" are furnished with cut-out designs on the vamp, designs available including ducks, fish and turtles. A new line introduced by the company at the show was the toddler bootie "totes" for infants who wear shoe sizes 2 to 8 only. Made of pure latex, they are supplied in white and blue with cowboy decoration for boys and white and red with lamb decoration for girls.

The Tingley-Reliance exhibit included a new line of Snug-Fit molded storm rubbers, which will fit dress shoes, brogues and work shoes. Three sizes fit the entire range of popular sizes. These new molded rubbers come in black, tan and pure gum colors. The company also displayed its well-known lines of Snug-Fit clogs, sandals and footholds.

Rubber manufacturers exhibiting extensive lines of soles and heels included the following: Avon Sole Co., Cat's Paw Rubber Co., Goodyear Tire & Rubber Co., Panther-Panco Rubber Co., Quabaug Rubber Co., and the Winchester Rubber & Plastics Co. Crepe soles and slabs were shown by Norwalk Tire & Rubber Co., Consolidated Rubber & Plastic Co., Panther-Panco, and others.

Coming Events

June 19-22. A.S.M.E., Semi-Annual Meeting, St. Louis, Mo.

June 23. Detroit Rubber & Plastics Group, Annual Outing, Forest Lake, Mich.

June 26-30. A.S.T.M., Annual Meeting, Chalfonte-Haddon Hall, Atlantic City.

July 14. Buffalo Rubber Group, Annual Outing.

July 28. Chicago Rubber Group, Outing Medinah Country Club, Chicago.

Aug. 8. New York Rubber Group, Golf Tournament, Baltusrol Club, Springfield, N. J.

Sept. 3-8. A.C.S., 118th National Meeting, Chicago, Ill.

Sept. 14. Southern Ohio Rubber Group, Engineers Club, Dayton.

Sept. 19-21. A.S.M.E., Fall Meeting, Worcester, Mass.

Oct. 6. Detroit Rubber & Plastics Group, Detroit-Leland Hotel, Detroit.

Oct. 9-10. A.S.T.M. Committee D-11 on Rubber Products, International Meeting, Cleveland.

Oct. 11-13. Rubber Division, A.C.S., International Rubber Meeting, Hotel Cleveland, Cleveland.

Oct. 20. N. Y. Rubber Group, Henry Hudson Hotel, New York.

Oct. 20. Boston Rubber Group, Somerset Hotel, Boston.

Nov. 26-Dec. 1. A.S.M.E., Annual Meeting, New York, N. Y.

Dec. 8. Detroit Rubber & Plastics Group, Xmas Party, Detroit-Leland Hotel, Detroit.

Dec. 15. N. Y. Rubber Group, Xmas Party, Henry Hudson Hotel, New York.

Dec. 15. Boston Rubber Group, Xmas Party, Somerset Hotel, Boston.

Feb. 28-Mar. 1-2, 1951. Rubber Division, A.C.S., Spring Meeting, Washington, D.C.

Quabaug Rubber showed an 18-iron neoprene sole and also a neoprene cork-grip sole, both new items with the company. The Goodyear exhibit included the full line of Neolite soles and heels and a new line of Chem-Crepe synthetic soles, available in nine different colors.

DC Mold Release Emulsion 35B

Dow Corning Corp., Midland, Mich., has announced the development of DC Mold Release Emulsion No. 35B, a stable silicone emulsion which does not cream in storage or separate in use. It is said to be extremely resistant to hard water, zinc, high speed agitation, and other conditions that tend to break emulsions. The product is also said to wet metal surfaces better and does not stain white or light-colored stocks. Free samples of DC Mold Release Emulsion No. 35B may be secured by writing the company.

CASING PRODUCTION IN MARCH 9.23% ABOVE FEBRUARY TOTALS

According to estimates of the Rubber Manufacturers Association, production of automotive casings in March totaled 7,314,390 units, 9.32% above the 6,690,603 units produced in February. During March, 6,172,064 passenger casings were produced, 10.10% above the 5,605,890 casings produced in the previous month. Truck and bus casings produced in March totaled 1,142,326 units, 5.31% over the 1,084,713 units produced in February.

A total of 6,793,707 automotive casings were shipped in March, 9.29% over the 6,216,277 units shipped in the preceding month. Passenger casings shipped during March jumped 7.47% or 5,653,574 units against 5,260,629 in February. Truck and bus casings shipped during March showed an increase of 19.30% with 1,140,133 units compared with 955,648 casings shipped in February.

As of March 31, 1950, there were 12,354,565 automotive casings on hand of which 10,332,388 were passenger casings and 2,022,177 were of the truck and bus type. At the end of the preceding month, 11,796,627 automotive casings were on hand, of which 9,784,715 were passenger and 2,011,912 were truck and bus casings.

Passenger and truck and bus tubes produced during March totaled 6,223,014 units, 7.23% above the 5,803,209 tubes produced during February. A total of 5,733,491 tubes were shipped during March, 2.20% more than the 5,609,901 units shipped in February. At the end of March there were 11,432,334 tubes on hand, compared with the 11,058,688 tubes on hand at the end of February.

Poster on Tire Pressures

The Rubber Manufacturers Association has published a new display poster containing the correct tire inflation pressures for all makes and models of automobiles for the period 1942 through 1950. The poster is part of the Association's effort, with the cooperation of automobile and tire manufacturers, petroleum companies, tire dealers and mass distributors of tires, to assure longer life and safe and comfortable operation of automobiles by making available in ready reference form accurate information concerning correct inflation pressures. Copies of the poster can be secured without charge from the Association which maintains headquarters at 440 Madison Ave., New York 22, N. Y.

Tackifiers for Neoprene Latex

Resumption of the production of emulsion tackifiers for neoprene latices has been announced by the American Resinous Chemicals Corp., Peabody, Mass. The demand for synthetic latices has been increasing steadily due to the current shortage of natural latex. The company's emulsion tackifiers are used with latices to increase specific adhesion, bond strength and tack. Special grades are supplied to obtain optimum properties with natural, GR-S and neoprene latices.

SPI SPONSORS CONFERENCE ON FILM, SHEETING AND COATED FABRICS

The Plastics Film, Sheeting and Coated Fabrics Division of the Society of the Plastics Industry, Inc., sponsored a conference of the plastics film and sheeting industry on May 25 and 26 at the Commodore Hotel in New York City. It was the first such conference sponsored by the division. William T. Cruse, executive vice-president of the organization, addressed the opening session and stated that the plastics film and sheeting industry is progressing rapidly toward the setting up of voluntary industry standards for vinyl and other thermoplastic products.

During the first day of the two-day session, the conference was also addressed by David Silman of the Cohn-Hall-Marx Co., who spoke on "The Style Approach to Plastic Fabrics." Donald C. Chase, of the Farrel-Birmingham Co., addressed the group on "Trends in Calenders and Calendering," while H. J. Ratti of the National Lead Co. spoke on "Vinyl Stabilizers."

Mr. Chase noted that the human element is still depended upon to determine when materials are to be mixed, as well as timing, temperature and speed. This, he said, is a most significant factor, for accurate vinyl calendering is entirely dependent upon the maintenance of uniform temperature in all parts of the calender as well as in the material.

Stating his belief that the industry is in the rapid development stage, Mr. Chase expressed the opinion that those who ultimately survive must be equipped to produce at high production rates with minimum labor costs. The trend is toward wider widths, thinner gauges, more uniform thickness, heavier rolls and material which can be slit and wound up in a uniform manner.

Mr. Ratti, in his address on vinyl stabilizers, said that an ideal stabilizer system would embody four essentials; hydrogen chloride accepter, reactive dienophilic molecule, antioxidant and ultraviolet light screen. He discussed a number of compounds, such as lead, calcium, cadmium, barium, tin, potassium, etc., pointing out their qualities as stabilizers.

Technical Progress Reports

Conference activities on the first day included the presentation of a series of 11 progress reports delineating progress made by committees which have been developing methods for evaluating the quality of plastic film and sheeting. A report on Group I, which is concerned with developing standard test methods on low-temperature flexibility and cold crack, pliability, fatigue, and crease-resistance, was submitted by F. J. Prescott, of the Barrett Division, Allied Chemical & Dye Corp.

David S. Plumb, of the Monsanto Chemical Co., reported on Group II, assigned the task of developing standard tests for determining abrasion resistance, tear resistance, tensile strength, hardness and burst. Group III activities were reported upon by M. R. Radcliffe, of the O'Sullivan Rubber Corp. This group is concerned with the development of standard tests for measuring accelerated aging, light fastness, and resistance to weathering.

Dr. R. G. Kadesch, of Emery Industries, Inc., reported on Group IV, the group which studies plasticizer migration, volatilization and extraction, color transfer, cleaning methods, and stain resistance. Group V activities were reported upon by F. C. Dulmage, Jr., of the Dow Chemical Co. Mr. Dulmage's group studies properties, resistance to mildew, resistance to insects and rodents, toxicity, odor and taste, and resistance to perspiration.

Talbot A. Lancaster, of the Plastic Film Corp., spoke on Group VI, which is assigned the subjects of blocking, adhesion, surface slip, adhesion of printing inks, seam strength and hydrostatic resistance. Group VII activities were reported upon by James R. Blagen, of the General Electric Co. This group studies flammability and moisture vapor transmission.

Frank J. Groten, of the Firestone Plastics Co., spoke on Group VIII activities. Mr. Groten's group was established to study dimensional stability. As for Group IX, the steering committee governing the activities of the SPI Plastics Film, Sheeting and Coated Fabrics Division, moved some time ago not to consider the subject "electrical properties" in view of the fact that tests for evaluating these properties are well covered by established and accepted ASTM test methods.

Group X activities were reported upon by R. S. Hallas, of the Bakelite Division of the Union Carbide and Carbon Corp. This group is concerned with the task of standardizing on nomenclature. Richard Beaver, of Electro-Plastic Fabrics, Inc., submitted a resume of Group XI activities, the group which is concerned with heat sealing characteristics.

Second Day of Conference

In an address during the second day of the conference, Elmer French, general sales manager of the Firestone Plastics Co., said that industry members now seek "self-policing" methods in future standard quality improvement activities. One segment of the industry, manufacturers of vinyl plactics, has organized an advisory committee which includes a broad cross-section of business and consumers, to help informative labeling practices. Mr. French stated that this committee includes representatives of material manufacturers, processors, fabricators, retail store associations, consumer associations and public testing laboratories.

The industry-wide program is now in an intermediate stage of progress, it was learned. The first step of informing industry members about advantages of informative labeling has been completed. Promotional information to users, retailers and consumers has started. A further step, comprising cooperative effort between material suppliers, processors, calenderers, extruders and others, is partly completed. Now a handbook on informative labeling is being prepared for future mailing, with product promotion data, to a list of 3,200 companies. Completion of the handbook is expected in October.

Howard S. Bunn, vice-president of the Bakelite Division of Union Carbide, spoke on "Vinyl Film, Limited—or Unlimited?" The speaker told the conference that 48,000,000 pounds of vinyl film and sheeting were produced in the first quarter of 1950 throughout the country, compared with 31,000,000 pounds in the first quarter of last year. M. C. Reed, of the same company, speaking on "Plasticizers for Vinyl Film and Sheeting," said that the nitrile rubber has been used quite successfully in making "color-it-yourself" oleomargarine packages.

Sidney L. Chambers, vice-president of Comprehensive Fabrics, Inc., national distributor of Goodrich Koroseal, speaking on "Gaining Respect Through Self-Respect," said that his company favored price stabilization through the fair trade laws to prevent ruinous exploitation of plastic products through excessive mark-downs by retailers.

"What the Furniture Manufacturer Expects of Vinyl Types of Upholstery Materials," was the title of a paper presented by J. William Brenner, president of the Brenner Furniture Corp. The speaker described steps taken to develop sensible guarantees in marketing plastic upholstered furniture. He told plastic producers to stop "over-selling." Constructive trade education was urged as a remedy for merchandising errors of the past.

Chester M. Robbins, of the Interchemical Corp., also presented a paper at the conference. Mr. Robbins' paper was entitled "A Review of Vinyl Printing."

New Plant for Mineral Pigments

Mineral Pigments Corporation, Muirkirk, Maryland, has announced that it has put into operation its new plant for the production of color and metallurgical grades of chromium oxide. The maximum capacity of the new plant will be 30,000 pounds daily. The plant is said to be completely mechanized in that practically all raw materials are pumped into the reactors and flow from this point on is entirely mechanical to the point where it is bagged. The uniformity of the method permits the manufacture of products with unusual uniformity not only insofar as color is concerned but in actual chemical purity. The method of continuous drying of the washed slurry also offers a product unusually free from agglomerates which makes it of particular value in a number of instances where fine and uniform dry powder is desirable.

Scrap Rubber Executive Group

The following were recently appointed members of the Executive Committee of the Scrap Rubber Institute of the National Association of Waste Material Dealers: John J. Costello (Tanney-Costello), Tom Crosby (Muehlstein), Louis Fishman (Fishman & Co.), Ben Gordon (Schulman), and A. Lowenstein. Henry M. Rose (Muehlstein) is president of the Scrap Rubber Institute, and Roger Ottignon (Berzen) is vice-president.

MELLON INSTITUTE'S REPORT INDICATES PROGRESS IN RUBBER

A review of the latest report of Director E. R. Weidlein to the board of trustees of the Mellon Institute of Industrial Research, covering the fiscal year ended February 28, 1950, indicates considerable progress in the various rubber researches being carried on at the Institute. Particular stress is being laid on synthetic rubber investigations.

According to the report, a multiple fellowship of the Office of Rubber Reserve of the Reconstruction Finance Corp. has gone forward in its investigations of process-control problems in the industrial production of synthetic rubber. The scope of this program has been enlarged to include the government petroleum butadiene plants. A number of instruments are being developed and certain commercial instruments are under modification. Several studies are in progress concerning possible methods for use in controlling variables in the low-temperature process.

Another multiple fellowship of the same sponsor is investigating fundamentally the relations between the molecular structure and the physical properties of elastomeric materials. The fellowship group is in a position to prepare polymers of a variety of types at both ordinary and sub-zero temperatures, to fractionate the products with respect to molecular weight, and to determine molecular weights both osmometrically and viscometrically. Structural analysis is receiving deserved attention. The major effort in research on physical properties has been devoted to concentrated polymer solutions. A beginning has been made on the acquisition of facilities for the study of the creep and dynamic properties of whole polymers.

The report also indicated that for eleven years the chemistry of organosilicon compounds has been under research by the multiple fellowship sustained by the Corning Glass Works in cooperation with the Dow Corning Corp. The past year has brought notable advances, with the physical properties of the rubber-like silicone (Silastic) having been considerably bettered. A treated paper is extremely water-repellent and resists the adhesion of pressure-sensitive tapes, rubber and many other materials.

The multiple fellowship maintained by the Armstrong Cork Co. has carried out a comprehensive investigation of various synthetic film-forming materials and has achieved progress in evolving two new products. The fellowship sponsored by the National-Standard Co. completed research that has led to the development of new methods of obtaining rubber-to-metal adhesion.

Advance Forms Canadian Firm

Advance Solvents and Chemical Corp. has formed a new company, the Advance Solvents and Chemical Corp. of Canada, Ltd., in Montreal, Que., Canada. The new firm expects to begin production of the parent company's line of naphthenate and octoate driers for the paint and protective coatings industry in the near future.

THREE JOIN SALES STAFF OF CHEMICAL DIVISION OF GOODYEAR TIRE

W. E. Kelly

D. M. Clark

J. E. Warner

Three additions to the staff of the Chemical Division of the Goodyear Tire & Rubber Company have been announced by H. R. Thies, division manager. William E. Kelly, who has been in sales training within the division for more than a year has been assigned to the New York district offices; J. E. Warner, also completing the division's extensive training course, is now in the Chicago district offices, and David M. Clark has been assigned to the Akron staff. All three, Mr. Thies said, have had extensive chemical training. Mr. Kelly, a native of Lindenhurst, N. Y., holds degrees from Hofstra and Lehigh Universities. Mr. Warner, whose home is in Warren, O., was graduated from Kent State University, and Mr. Clark, of Portsmouth, O., has degrees from Ohio State and Princeton.

Leland Named Vice-President

Harold B. Leland, manager of industrial relations, has been appointed vice president in charge of manufacturing for the Hood Rubber Company, a division of the B. F. Goodrich Company. Mr. Leland has been manager of employee and industrial relations at Hood Rubber since 1937, following a six-year tenure as divisional superintendent in charge of calendering and cutting on footwear and all miscellaneous products. He joined the company in 1917, after graduating from Tufts College as a chemical engineer. After two years' service with the Navy in World War I he returned to Hood, where he was employed in the laboratory technical service department. He has been with the company ever since. During World War II Mr. Leland served as a panel member of the Regional War Labor Board. He is a director of the Massachusetts Blue Shield, a member of the Boston Chamber of Commerce, and serves on the Manufacturing Committee of the Rubber Manufacturers Association.

Start Another Foamex Factory

Construction of a new $2,500,000 factory in Fall River, Mass., for the production of Foamex mattresses, pillows and cushioning will start within the next several weeks. The new building, which is scheduled for completion within six months and which will employ approximately 400, will adjoin the other $2,000,000 addition to the plant completed in 1949, and will cover about the same area. The new factory will mark the fifth time since the end of the war that Foamex production facilities have been expanded in Fall River.

Fire Damages Xylos Plant

One life was lost and damages estimated at $40,000 resulted in an industrial blaze that swept a part of the Xylos Rubber Co. plant in Akron, Ohio, on May 22. Xylos is the reclaim subsidiary of the Firestone Tire & Rubber Co. The blaze started in a rubber drying machine. Flames enveloped the unit but were apparently extinguished by automatic sprinkling devices. Two hours later, however, the blaze broke out again. Plant employees attempted to fight the flames for a while, but then called in city equipment. The blaze spread through the first floor of the drying wing and then climbed to the second and third floors. Operations in the main plant were not disturbed by the fire. The plant was closed for about 3 days to permit repairs. During this time approximately 600 production and 100 office employees were idle.

Lee Secures New Tire Patent

Lee Rubber & Tire Corp., Conshohocken, Penna., has announced that U. S. Patent No. 2,505,137 has been granted to A. H. Nellen, vice-president in charge of the company's development and research, covering the basic mechanical features of the Lee Winter-Summer Tire. The patent has been assigned to the corporation. The Lee Winter-Summer Tire is made up of 275 odd-shaped cleats which are staggered across the tread. These features made it a high traction tire for winter and a regular tire for other seasons. The specially shaped cleats, or caulks, on longitudinal ribs, are designed to make chains unnecessary for most winter driving operations and provide good traction in snow.

RESEARCH PROBLEMS AND RESULTS ARE DISCUSSED BY DR. TRUMBULL

Dr. Harlan L. Trumbull, director of colloid and textile research of the B. F. Goodrich Co., and assistant to the vice-president in charge of research, was the principal speaker at the 1950 International Meeting of the Buffalo Rubber Group and the Ontario Rubber Section of the Chemical Institute of Canada, held at the Hotel General Brock, in Niagara Falls, Ontario, Canada, on May 19. Dr. Trumbull discussed "The Variability of Rubber Chemists."

Describing a research man as "one trained in science who persists in thinking about new ideas, prompted mainly by a tireless curiosity and with what may seem to be total disregard of practical applications," Dr. Trumbull emphasized the point that without the most unpredictable element of research—the human element—there could be neither research nor progress through research. He stated that the research man must have confidence in his own well-directed curiosity and added that it will pay him to be skeptical about nearly everything else he encounters in the world about him.

To explain the broad roads on which research can take the traveler, Dr. Trumbull discussed the formation and operation of a hypothetical company the management of which decided that research would be undertaken in a definite field, i.e., rubber goods manufacture. The chances are strong, according to Dr. Trumbull, that the company would end up with a flock of patents pertaining to a number of non-rubber products if the program were continued indefinitely. The problem facing the research director in such an instance, he said, is when to continue and when to abandon a research project. The proper decision often determines the fate of the company.

Research Situation at Goodrich

Continuing this line of thought, Dr. Trumbull discussed the research situation which existed at the Goodrich laboratories at the end of World War I. The three problems which intrigued the research men at that time were synthetic rubber, latex technology, and organic accelerators. For various reasons, work on these three problems was held in abeyance for several years, particularly because the research director had great confidence in the commercial advantages of making new chemical derivatives of rubber, a position in which he was supported by the president of the company. Out of the latter activity came Thermoprene, from which numerous products were eventually derived. Work on the other three projects was launched within the decade following World War I.

The point emphasized by Dr. Trumbull was this: The major projects at any particular time in each decade are going to include a few which the scientists regard as basic and a few which for economic reasons the management has decided are important to the future of the company. In the long run both the work which management deems important and that which the research men conceive as having long range value are going to be accomplished, provided the company has good scientists and a man with vision to direct them. From the management side, it is good business to have executives who know the value of research.

In concluding his talk, Dr. Trumbull said that management should look to the research director not only for guidance and leadership, but for decisions pertaining to courses of action. He added that the poorest time to start a research project "is after your company has been clearly outstripped by a competitor," while the best time to abandon a research project "is before you have done any work on it."

Electrically-Heated Mat

Ralph E. Lee of Detroit, Mich., has been granted U. S. Patent No. 2,497,998 for a new type of electrically-heated rubber mat devised to keep snow and ice off door-steps and walks. Within the rubber mat are electric resistance wires similar to those used in ordinary heating pads. There are water run-off channels on its upper surface. The mat may be rolled for storage. A waterproof cable to connect the mat with an electric outlet is provided. The inventor states that the mat has many other possible applications, such as on landings, platforms, garage driveways and road surfaces. Another suggested use is in place of a tarpaulin over a football field.

Connecticut Holds Spring Meeting

Approximately 70 members and guests attended the Spring Meeting of the Connecticut Rubber Group, held at Rapp's Restaurant in Shelton, Conn., on May 12. The highlite of the meeting was the joint presentation of a discussion on "The Strange Case of Carbon Black and Rubber" by H. A. Braendle and W. A. Ladd of the Columbian Carbon Co. Mr. Braendle first outlined the development of the concept of chain structure in carbon blacks and Mr. Ladd then showed a series of electron photomicrographs, most of them in three dimensions, illustrating the actual physical entity of these chains. Mr. Braendle then developed the carbon gel idea and its implications and applications in both GR-S and natural rubber following which Mr. Ladd again presented electron photomicrographs proving again the physical entity of a concept developed originally by deduction from physical data. Another feature of the meeting was the presentation of a talk on "Detection of Counterfeit Currency and Duties of the Secret Service," given by W. J. Gilmartin, agent in charge of the Connecticut Office of the Secret Service. A slate of candidates for next year's offices was presented by William O'Brien (Seamless Rubber). The slate was accepted and will be voted on by mail in the near future.

CHICAGO GROUP ELECTS OFFICERS; HEARS ADDRESS ON PLASTISOLS

The results of a recent letter-ballot for the election of officers were announced at the May 12 meeting of the Chicago Rubber Group held at the Morrison Hotel in Chicago, Ill. Officers elected for the 1951 season include: *Chairman,* Paul Niessen (Victor Mfg.); *Vice-Chairman,* Frank Taylor (Commercial Solvents); *Secretary-Treasurer,* James Hopkins (Van Cleef).

The following members were elected to the Executive Committee: C. M. Baldwin (United Carbon); Bob Hartman (Monsanto); R. L. Campbell (N. J. Zinc); A. E. Laurence (Phillips Chemical); L. W. Heide (Western Felt); J. C. Gallagher (Allis Rubber); Vaughn Castor (Brown Rubber), and R. H. Barbour (Chicago Rawhide Mfg.).

The meeting featured the presentation of a paper on "Plastisols and Organosols," by Dr. E. G. Partridge, director of research of American Anode, Inc., Akron, Ohio. Dr. Partridge reviewed the history of the development of these materials. He pointed out that these so-called paste resins represent a unique application in resin technology, permitting plastic systems in which the resin content may be varied from 80% in the case of organosols to 100% in the case of plastisols.

The base resin in these paste resins are polyvinyl chloride polymers especially adapted for this purpose and widely available under a host of brand names, the speaker said. Currently, the production of paste resins is in the neighborhood of 3,000,000 pounds per year. Of this amount, plastisols account for 15%; modified plastisols for 35% and organosols for 50%.

Manufacture of Plasticizers

Dr. Partridge noted that since the paste resins contain up to 40% plasticizer, this has resulted in an unusual amount of activity in the manufacture of plasticizers. Several groups of plasticizers thus enjoy a wide usage in paste resins. These may be classified in this manner:

Primary Plasticizers: These are the so-called solvent type and include the phthalate, phosphate, adipate, sebacate and azelate esters.

Secondary Plasticizers: These are used in conjunction with the primary plasticizers for achieving particular properties. These include the petroleum type plasticizers and the chlorinated phenyl derivatives.

Resinous or Non-Migrating Plasticizers: These include various polyester resins, certain polyethylene glycol derivatives and Buna N type rubbers.

In formulating paste resins, heat and light stabilizers are recommended, including certain lead, calcium and tin compounds, and organic compositions. Fillers may also be added to the paste resins to achieve certain properties, and these are preferably dispersed in a portion of the plasticizer and blended into the paste resin.

The second speaker of the evening was W. L. Ryan of the Federal Bureau of Investigation. Mr. Ryan discussed the organization of the FBI.

WASHINGTON ELECTS OFFICERS AND HEARS TALK BY GARVEY

Election of officers for the 1950-51 season and the presentation of two talks featured the final spring meeting of the Washington Rubber Group, held at the Cosmos Club in Washington, D. C., on May 23. The talks were given by Dr. B. S. Garvey, Jr., director of the sales service laboratory of Sharples Chemicals Inc., Devon, Penna., and Capt. William R. Millis, assistant chief and director of research and development for the Bureau of Ships, Washington, D. C. Capt. Millis discussed the interest of the Bureau in rubber.

Dr. Warren G. Stubblebine, research director for the Chemicals and Plastics Section of the Quartermaster General's Research and Development Branch, was elected president of the group. Dr. Stubblebine was formerly head of the plastics section of the research laboratories of the Armstrong Cork Co. He succeeds R. J. Devereaux, special representative in Washington for the B. F. Goodrich Co.

Other officers elected included the following: *Vice-President,* T. R. Scanlon (Gates Rubber); *Secretary,* Richard E. Harmon (Connecticut Hard Rubber); *Treasurer,* Everett G. Holt (Commerce Department); *Recording Secretary,* Ethel Levene (Bureau of Ships).

Science and Art in Rubber

In his talk on "Science and Art in the Rubber Industry," Dr. Garvey said that scientific knowledge is acquired by methods of test and measurement which are independent of the observer and can be recorded in numbers or in simple words with rather precise meaning; hence, scientific knowledge is cumulative and can grow rapidly. The artisan, on the other hand, must acquire his knowledge through his own senses and the accumulation of knowledge is inhibited by both the weakness of descriptive language and by the variations in individual sensitivity. As a result, the artisans attack on a problem is largely subjective while that of the scientist is largely objective.

Dr. Garvey then pointed out that the pertinent phase of the rubber manufacturing industry in America is the conversion of crude rubber into useful articles, and at the focal point of the industry is the compounder. Focussing on the recipe for a rubber compound, he said, there is research on the properties and structure of rubber, on the synthesis of rubber, on accelerators, on antioxidants, on test methods, etc. The compounder, however, must diagnose the problem and write the recipe.

Discussing the work of the compounder, Dr. Garvey stated that his work is much like that of the medical doctor in writing a prescription. Like the doctor he has a great store of scientific knowledge on which to draw and like the doctor his work must combine a high degree of both science and art for the best results.

In his talk, Capt. Millis stressed the value of any activity which is instrumental in bringing industry and government closer together, adding that it is extremely important that the people in the rubber industry fully understand the necessity for the specialized requirements in the Bureau of Ships' specifications for materials in which rubber is either the principal component or a vital constituent.

According to the speaker, few people, even among those in the rubber field, realize the great diversity of rubber articles that are required as part of the operating or combat equipment aboard a modern naval vessel. For example, he stated, over 60,000 pounds of rubber are used in a carrier of the Midway class. Approximately 5% of the weight of a modern submarine consists of rubber, and the rubber battery jars and rubber lining of the submarine compartments in one submarine total nearly 55,000 pounds.

Capt. Millis outlined some of the requirements for various applications. Among these he cited rubber coverings for 60-foot shafts on aircraft carriers; ship-to-ship fueling hose which does not weigh too much and yet will withstand the terrific pull occasioned by a heavy sea; synthetic rubber compounds with good adhesion, flexibility and resistance to weather and extremes of temperature, and protective clothing which will cover personnel from head to foot. The basic need for these requirements was discussed by the speaker.

44,670,588 Registered Vehicles

According to the Federal Reserve Board, a record of 44,670,588 motor vehicles were registered last year of which 36,292,703 were private automobiles. The number of private cars, of which 4,838,342 were new, was 9.2% higher than the 1948 total. According to the Federal agency, an even bigger gain is in prospect for this year. The registration tabulations came from the Public Roads Bureau. It also reported that motorists were stepping up the use of their cars. As an illustration it estimated that there were "16,677,000,000 miles of travel" on rural roads during March, a 7.2% increase over the same month last year. City streets also came in for more March traffic, with a .5% increase to a total of 16,599,000,000 miles.

N. Y. Sets Golf Tournament

The 1950 Golf Tournament of the New York Rubber Group will be held on Tuesday, August 8, at the Baltusrol Club in Springfield, N. J. J. S. Corrigall, of the R. T. Vanderbilt Co., has been named chairman of the Golf Committee. He will be assisted by the following: Joseph Breckley (Titanium Pigment), Tom F. Callahan (Witco Chemical), E. B. Curtis (Vanderbilt), and G. W. McComb (Rubber Corporation of America).

NO. CALIFORNIA HEARS SHAW ON THINNERS AND SOLVENTS

The April 27 meeting of the Northern California Rubber Group, held at the Claremont Hotel in Berkeley, Calif., was addressed by C. M. Shaw of the California Research Corporation, Richmond, Calif. Mr. Shaw spoke on "Thinners and Solvents for the Rubber Industry."

In his address, Mr. Shaw stated that at one time petroleum solvents were regarded as little more than by-products of petroleum refining. Today, petroleum solvents occupy an important position in the petroleum industry as well as in many other industries where they are used as part of the manufacturing process or as a raw material for manufactured products.

The rubber industry requires solvents in the manufacture of hundreds of items. These items include such materials as rubberized fabric, dip goods, rubber gloves, rubber cements and tackifying agents. Solvents commonly used for these operations are the low boiling aliphatic thinners containing hexanes and heptanes. These solvents are used wherever possible because of their low toxicity. Maximum concentrations of 500 to 1000 parts per million of air have been established as safe working limits. Solvents such as benzene and carbon tetrachloride must be kept at concentrations below 50 parts per million.

Percentage of Aromatics

The newer synthetic rubbers require solvents having a higher percentage of aromatics than does natural rubber. The safe working concentrations for toluene and xylene have been set at 100 to 200 parts per million. The importance of using a solvent containing the minimum of aromatics consistent with the performance requirements cannot be overestimated. Because of new refining techniques the petroleum industry today is able to supply products having an aromatic content varying from nearly zero to one hundred per cent.

Research data to evaluate the effect of physical properties of thinners on the viscosity of synthetic resin solutions lead to the conclusion that the chemical composition of the thinner influences the equilibrium between colloidal dispersion and solubility of the resin. Such a theory explains the large changes in viscosity which occur in rubber solutions by the addition of a small amount of a polar non-solvent.

It is expected that many new uses for petroleum products in the rubber industry will develop in the future. The present close cooperation between the rubber and petroleum industries will undoubtedly bring forth solutions to any technical problems which arise, Mr. Shaw concluded.

A new technical data sheet published by the Tennessee Eastman Corp., Kingsport, Tenn., discusses crotonaldehyde, giving specifications and properties of this unsaturated aldehyde, plus a number of proposed uses. The data sheet is available on request to the company.

BUREAU OF MINES ISSUES REPORT ON 1949 CARBON BLACK TRENDS

Both sales and production of carbon black were off in 1949 as compared with the previous year, according to a report issued by the U. S. Bureau of Mines. Sales amounted to 1,125,410,000 pounds, a drop of 10%, and production to 1,223,636,000, a drop of 6%. Stocks rose 98,218,000 pounds to a year-end total of 216,461,000 pounds.

Production decreased in all reporting States except New Mexico, the Bureau said. Texas' production declined 3 per cent. It produced 71.5 per cent of all carbon black in the country. Contact (channel) black production decreased by nearly 50,000,000 pounds and furnace black by 25,000,000 pounds.

The decline in sales took place principally in contact grades. Sales of furnace grades declined only 1 per cent. Rubber companies purchased 767,131,000 pounds, 103,000,000 pounds less than in 1948. Sales to ink companies remained practically unchanged and paint companies purchased 3 per cent more than in 1948. Export sales declined, for the first time since 1944, to 303,244,000 pounds.

Stocks of contact black held by producers at the end of the year totaled 119,599,000 pounds, up 91,953,000 pounds from 1948. Stocks of furnace blacks increased 6,265,000 pounds to 96,862,000 pounds.

Average Yield Again Falls

The average yield of carbon black from natural gas declined again, although slightly, to 2.38 pounds per thousand cubic feet. The carbon black industry consumed 427,892,000,000 cubic feet of natural gas valued at 4.76c per thousand cubic feet. This average value is 0.03c per thousand cubic feet above the value in 1948. In addition, 72,387,000 gallons of liquid hydrocarbons were consumed compared with 44,600,000 gallons in 1948.

The average value at plants of all carbon blacks increased from 5.88c per pound in 1948 to 6.10c in 1949.

The number of plants operating in 1949 was 64, one more than in 1948. One new furnace plant was built in Texas and parts of two channel plants were moved to new locations. Two channel plants were combined; seven channel plants and one furnace plant were shut down during or at the close of the year.

Improvements at St. Marys Plant

A $1,000,000 expansion and improvement program at the St. Marys, Ohio, plant of the Goodyear Tire and Rubber Co. began early in May. Ground has been broken for a new building to house molded and extruded goods manufacture, warehousing and engineering services. Located directly opposite present plant buildings, the new addition is to be 170 feet wide and 600 feet long, giving 112,000 square feet of floor space. Plant structure is to be a one-story, monitor type, constructed of concrete blocks and steel. Improvements to the present plant include the addition of new boilers to the power house.

Pauley Heads Airfoam Department

R. E. Pauley

R. E. Pauley, formerly manager of molded goods sales at the St. Marys, Ohio, plant of the Goodyear Tire & Rubber Co., has been named manager of the company's Airfoam Department in Akron. Mr. Pauley, who joined the Goodyear organization in 1935 in the Chicago offices, has held assignments with the Mechanical Goods Division in Dallas, Cleveland and Pittsburgh. He went to St. Marys as manager of molded goods sales in June, 1947. In 1943, Mr. Pauley won the P. W. Litchfield award as the company's outstanding domestic salesman. He is a native of Linden, Indiana, and holds a chemical engineering degree from Purdue University. R. C. Hogan and J. A. Bernel continue as sales manager and assistant sales manager, respectively, of the Airfoam Department.

New Belting Plant Staff

As previously announced, H. L. Dixon, formerly production superintendent of the Industrial Products Division of the B. F. Goodrich Co., was recently named to the newly-created post of manager of belting and matting. The announcement followed the start of operations at the company's new $5,000,000 belting plant in Akron. It has now been announced that the following will report to Mr. Dixon: David G. Hunt, production manager; Harold Walsh, staff manager; Herbert L. Fink, technical manager, and Louis Ream, process engineer. R. D. Hager is general superintendent of the Industrial Products Division.

Planning New Polyethylene Plant

The Bakelite Division of the Union Carbide & Carbon Corp. has announced plans for a new polyethylene resins plant at South Charleston, West Virginia. The new plant, which will be operated by the Carbide & Carbon Chemicals Division, is scheduled to be in full operation by the third quarter of 1951. The new facilities, when completed, will almost double the present production rate of Bakelite polyethylene.

NATURAL RUBBER CONSUMPTION IS OUTSTRIPPING PRODUCTION

World consumption of natural rubber in the first quarter of the current year amounted to approximately 382,500 long tons as against world production of 365,000 long tons, according to estimates compiled by the Rubber Division of the Office of Domestic Commerce and the Secretariat of the Rubber Study Group.

Of the consumption figure, the United States accounted for 177,400 long tons, the United Kingdom for 54,600 tons, Russia (based on imports only) for 7,300 tons, and all other countries for 143,200 tons. Of the production figure, Malaya provided 161,900 tons and all other countries 203,100 tons. World consumption in the first quarter of 1949 amounted to 372,500 long tons and production to 355,000 tons.

Total world new rubber consumption for the first three months of the current year was estimated at 495,000 tons, an increase of 2,500 tons from the corresponding period of 1949. Since estimated imports of natural rubber into Russia, included in these figures, amounted to only 7,250 tons in the 1950 period, as against 32,500 tons in the first quarter of 1949, estimated consumption outside Russia therefore showed a rise of 27,750 tons in the 1950 period.

Synthetic Rubber Production

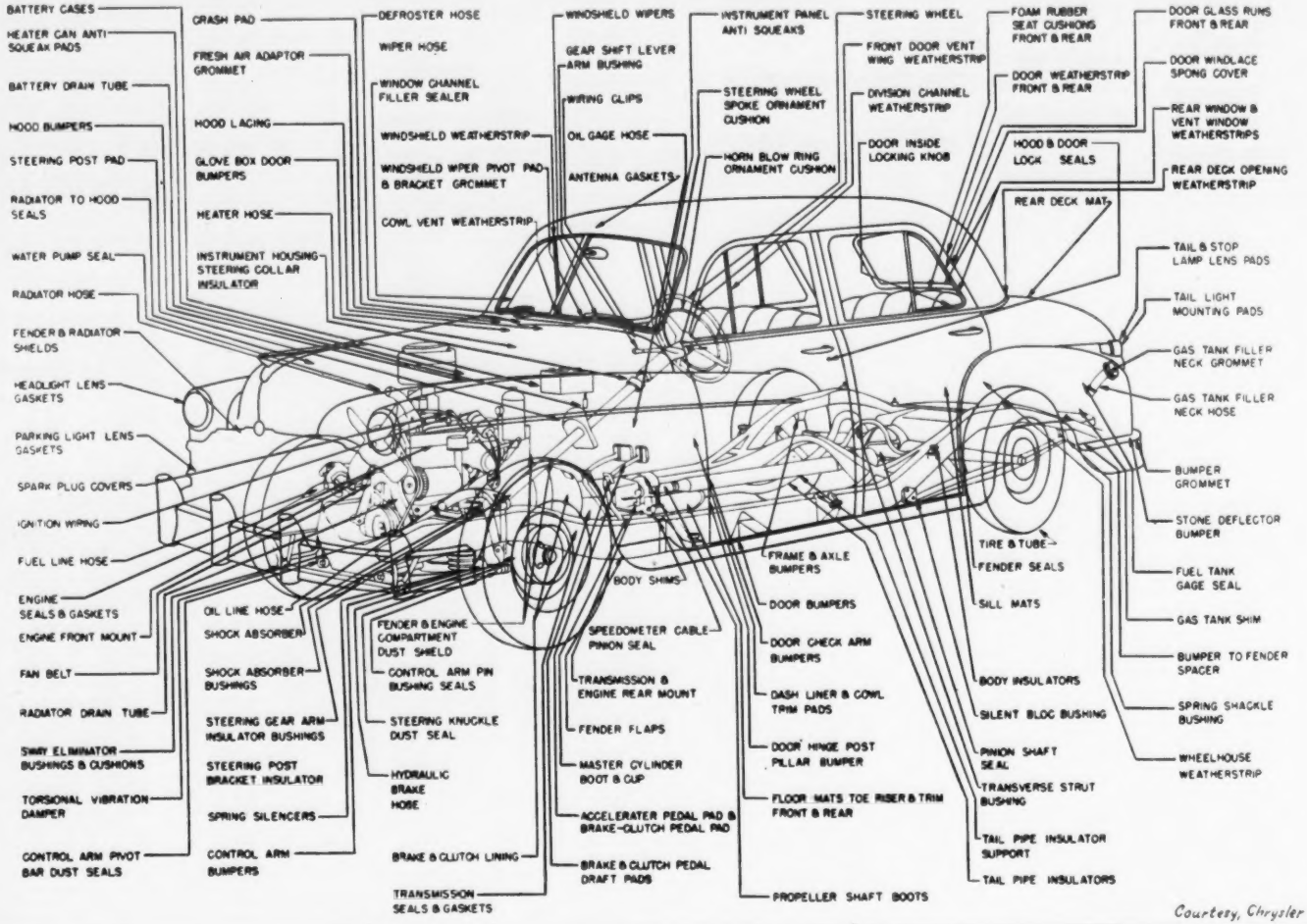
Total world production of synthetic rubber in the first quarter of this year amounted to 104,407 long tons and consumption to 112,500 tons as against 123,757 tons and 120,000 tons, respectively, in the corresponding 1949 quarter. No estimates for Russia are included in the synthetic rubber figures.

World stocks of natural rubber, excluding Russian stocks and government stocks in the United States, the United Kingdom and France, were estimated at 705,000 long tons at the end of March, consisting of 227,500 tons in producing countries, 257,500 tons in consuming countries, and 220,000 tons afloat. Total stocks at the end of 1949 amounted to 757,000 tons. Synthetic stocks at the end of March, 1950, were estimated at 97,500 tons, down 12,500 tons from the 1949 year-end.

Rubber in Automobiles →

One of the most comprehensive drawings indicating the manifold uses of rubber in automobiles is reproduced on the opposite page. Prepared by the Central Engineering Rubber and Plastics Laboratory of the Chrysler Corporation, it covers an even 100 applications calling for some 150 rubber parts. According to recent estimates, between 94 to 143 pounds of rubber, depending on the model, are incorporated in 1950 automobiles, with tires and tubes accounting for 24 to 43 pounds, depending on size and style, and all other applications for 70 to 100 pounds.

RUBBER: AS IT IS USED IN A MODERN AUTOMOBILE



Courtesy, Chrysler Corp.

NEWS IN BRIEF

"Effect of Variable Philblack A and Softener Loadings in Cold Rubber, GR-S and Natural Rubber," is the title of a new technical bulletin released by Phillips Chemical.

A reprint from *Foreign Agriculture*, publication of the U. S. Department of Agriculture, covering small-farm rubber production in Latin America, has been made available by the Department.

Reinhold Publishing Corp., 330 West 42nd St., New York 18, N. Y., is offering a free catalog of its technical books entitled "Let's Look it Up." The 1950 catalog may be secured on request to the company.

Extensive plant tests are said to have shown that savings as high as $100 a year per man can be realized by using industrial work garments made with Vinyon N yarn, product of Union Carbide and Carbon Corp. Chem-Wear Corp., 740 Broadway, New York 3, N. Y., manufactures work clothing from Vinyon N yarn.

Acheson Colloids Corp., Port Huron, Mich., has opened headquarters for its Dispersed Pigments Division at 420 Lexington Avenue, New York, N. Y.

Since 1892, 100,000,000 bicycle tires have been produced at the Indianapolis, Indiana, plant of the U. S. Rubber Co. Original tires were made for high wheel bicycles and the carriage trade. The company also makes bicycle tires at the Fisk plant in Chicopee Falls, Mass.

Resistoflex Corp., Belleville, N. J., has leased its plant in Elkhart, Indiana to the U. S. Rubber Co. The property, containing about 93,000 square feet of floor space, will be used by U. S. Rubber's Footwear Division as a warehouse.

The National Association of Manufacturers has announced publication of a new, handy, up-to-date collection of 70 basic economic tables in one pocket-size, loose-leaf volume known as the "National Fact Book." Initial subscription is $15.00, with renewal of $5.00 annually to cover the cost of loose-leaf refill service. Address the NAM at 14 West 49th St., New York 20, N. Y.

Price reductions of 2 cents per pound for its liquid polyethylene glycols and certain Carbowax compounds have been announced by the Carbide and Carbon Chemicals Division, Union Carbide and Carbon Corp.

New waist-high waders for fishermen made of Vinylite are being produced by the U. S. Fiber and Plastics Corp., Stirling, N. J.

A new protective hood designed for workers in danger of acid or other sprays has been designed by the General Scientific Equipment Co., Philadelphia 2, Penna. Known as the G-S Safety Hood, the product is coated with an improved rubber and is said to be impervious to moisture, most acids, oils, solvents, etc.

A new, three-color, six-page bulletin describing the company's new, precise proportioning and blending system for the delivery of small, crushed, granular or non-flushing ground materials, has been made available by the Richardson Scale Co., Clifton, N. J. Ask for Bulletin No. 3849.

"What is Your Safety IQ?" is the title of a new training film on the prevention of accidents in home, in traffic and in recreation released by the National Safety Council. The film may be obtained from the Council at 20 North Wacker Drive, Chicago 6, Ill.

Semi-finished bearing bronze shapes and special bar stock sizes up to 19 inches O. D., up to 40 inches long solid, up to 20 inches long cored, are the subjects of two bulletins available from the Magnolia Metal Co., Elizabeth 4, N. J.

Raybestos-Manhattan, Inc., has moved its New York offices from 120 Broadway to 500 Fifth Avenue. The New York and New England district offices of the Manhattan Rubber Division, the Corporation Export Department and the Allied Asbestos and Rubber Co. (Export), Inc., are now located at the new address.

S. Buchsbaum and Co., Chicago, is marketing a new 8-ounce raincoat, for both men and women, made of thin but tough Vinylite cast film to combine the advantages of a fraction of the weight and bulk of conventional raincoats. The new raincoats fit into a matching smoky oxford grey Vinylite carrying pouch.

U. S. Rubber is now packing each deluxe U. S. Howland Swim Cap in an individual two-tone plastic container. The container is so designed that the customer can use it at the beach or pool as a carrying case for cosmetics, cigarettes and other small objects. It also serves the dealer in a counter display and protects the cap from handling.

A two-page bulletin describing the Model SF-4 Sonntag fatigue machine of plus or minus 5,000 pound capacity has been issued by the Baldwin Locomotive Works. The bulletin tells how the testing machine works, gives specifications, and contains illustrations showing both external and internal equipment, controls and operating mechanism.

Malayans Visit United States

Two prominent Malayans, both members of the Federal Legislative Council of Malaya, have been visiting the United States this past month. They are Tuan Sheikh Ahmad and Dato E. E. C. Thuraisingham, the former closely associated with native rubber production in Malaya and the latter with Asiatic estate operations. The title "Dato" is similar to that of "chief." In an interview in New York, both men were firm in their opinion that the prevailing higher price of natural rubber will insure maximum production in British Malaya, thus averting any possible shortage of rubber and greatly bolstering the economy of the Far East. They attributed current disturbances in Malaya to armed bandits rather than to communists, adding that the so-called terrorism was more a nuisance than a threat to rubber production. As to the spread of Communism in Southeast Asia as a whole, both men indicated that it could be effectively stopped if sufficient help is provided by the United States and other democracies to the government of Indo-China.

Sinclair-Collins Names Symons

The Sinclair-Collins Valve Co., of Akron, Ohio, manufacturers of automatic valves and cycle controllers for the rubber, plastics and allied industries, has announced the appointment of Ralph B. Symons, of Tiverton, R. I., as exclusive representative in the New England area. Mr. Symons has been associated with the rubber and plastics industry in Canada and the United States since being graduated from the University of Toronto in 1933. He has been associated with the Dunlop Tire & Rubber Goods Co. and the Canada Wire & Cable Co. in Canada, and the Firestone Tire & Rubber Co., Wilmington Chemical Corp., and the Carr Manufacturing Corp. in the United States. Since May, 1946, he has been acting as a sales consultant and technical representative for various companies.

Cardolite 625 Plasticizer

The Irvington Varnish & Insulator Company, Irvington 11, N. J., has developed a new low-temperature plasticizer, Cardolite 625. This plasticizer produces good low-temperature flexibility when compounded with Buna N. Tests indicate freedom from failures at —70° F. when using 30 to 40 parts of Cardolite 625 on 100 parts of Buna N by weight. Another outstanding property is the high tensile strength of Buna N compounds containing Cardolite 625 as compared to other conventional low-temperature plasticizers. Data sheets and samples will be submitted on request to the Irvington company.

Larger production of di-isopropyl amine has been announced by the Union Carbide & Carbon Corp. The material now meets exceptionally high standards of purity, with a minimum specification of 98% by weight. It is available for immediate shipment in tank car or compartment car lots.

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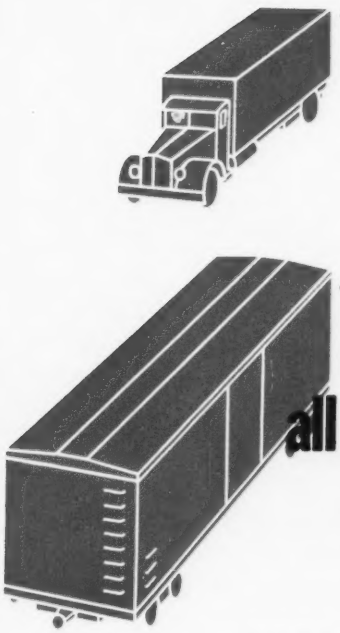

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NEW POLYMERS AUTHORIZED BY OFFICE OF RUBBER RESERVE, RECONSTRUCTION FINANCE CORPORATION

Listed below are types and properties of new experimental GR-S polymers (including GR-S latices) which have been authorized by the Office of Rubber Reserve, Reconstruction Finance Corporation, since publication of those in our previous issue. Procedures for the distribution and sale of these polymers will be found in our October, 1945, issue. Normally, experimental polymers will be produced only at the request of the consumers and 20 bales (one bale weighs approximately 75 pounds) of the original run will be set aside if possible for distribution to other interested companies for their evaluation. The 20 bales when available will be distributed in quantities of one or two bales upon request to the Sales Division of Rubber Reserve or will be held for six months after the experimental polymer was produced unless otherwise consigned before that time. Subsequent production runs will be made if sufficient requests are received to warrant them.

X Number	*Manufacturing Plant*	*Date of Authorization*	*Polymer Description*
X-563 GR-S	U. S. Rubber, Borger	1-6-50	A mixture of 55 parts Kosmos 60 and 100 parts of GR-S polymerized at 41° F. reaction temperature, emulsified with Dresinate 214. Shortstopped with dinitrochlorobenzene. Mooney viscosity 50. Stabilized with 1.5% BLE. Marasperse and caustic used in carbon black slurry make-up.
X-564 GR-S	General, Baytown	2-2-50	A mixture of 50 ± 2 parts Philblack-O and 100 parts GR-S made at reaction temperature of 41° F. with a cumene hydroperoxide activated recipe emulsified with Dresinate 214 and K-ORR soap. Dresinate 214, sodium lignin sulfonate and lignin used in carbon black slurry make-up. Shortstopped with dinitrochlorobenzene. Shortstop Mooney viscosity 38 ± 4, stabilized with 1.5% PBNA.
X-565 GR-S-SP	U. S. Rubber, Naugatuck	2-6-50	GR-S made at 41° F. reaction temperature with a cumene hydroperoxide activated recipe emulsified with K-ORR soap. Shortstopped with sodium dimethyl dithiocarbamate. Mooney viscosity 55 ± 7. Stabilized with 1.5% UBUB. Glue-acid coagulation.
X-566 GR-S	General, Baytown	3-3-50	A mixture of 75 parts of Philblack A and 100 parts of GR-S-26. Stabilized with 1.5% parts Wingstay S antioxidant. Marasperse used as dispersing agent in carbon black slurry make-up.
X-567 GR-S-SP	U. S. Rubber, Naugatuck	3-3-50	Same as GR-S-85-SP except stabilized with 1.25% Stalite.
X-568 GR-S	Goodyear, Houston	3-21-50	GR-S polymerized at 41° F. reaction temperature, emulsified with Dresinate 214 and K-ORR soap. Activated with cumene hydroperoxide or diisopropyl-benzene monohydroperoxide or mixture of both and tetraethylene pentamine. Shortstopped with sodium mercaptobenzothiazole. Mooney viscosity 47 ± 7. Stabilized with 1.50% Wingstay S.
X-569 GR-S	General, Baytown	3-23-50	A mixture of 50 ± 2 parts Philblack A and 100 parts of GR-S polymerized at 41° F. Sodium lignin sulfonate type emulsifying agent used in preparation of carbon black slurry. Cumene hydroperoxide activated recipe emulsified with K-ORR soap and Dresinate 214. Shortstopped with dinitrochlorobenzene, stabilized with 1.5% PBNA. Shortstop viscosity of latex 42 ± 5 Mooney.
X-570 GR-S Latex	U. S. Rubber, Naugatuck	3-27-50	GR-S latex, charge ratio similar to Type II, polymerized at 41° F. reaction temperature. Activated with cumene hydroperoxide, emulsified with K-ORR soap. Shortstopped with dimethyl ammonium dithiocarbamate. pH 9.0-10.0, total solids 22-25%.
		Please Note Changes Made in the Following Experimental Polymers	
X-512 GR-S-SP	U. S. Rubber, Naugatuck	3-23-50	Mooney viscosity changed to 55 ± 7 instead of 55 ± 5.
X-540 GR-S	Firestone, Lake Charles	11-21-49	Mooney viscosity changed to 52 ± 7 instead of 57 ± 7.
X-542 GR-S	Goodrich, Port Neches	2-6-50	Mooney viscosity changed to 52 ± 7 instead of 55.
X-556 GR-S	General, Baytown	3-23-50	Mooney viscosity changed to 42 ± 5 instead of 37 ± 5.
X-561 GR-S	General, Baytown	3-23-50	Shortstop Mooney viscosity is 41 ± 5.
X-562 GR-S	General, Baytown	3-23-50	Shortstop Mooney viscosity is 41 ± 5.

NOTE: The above new polymers are experimental only and the Office of Rubber Reserve, Reconstruction Finance Corporation, does not make any representations or warranties of any kind, expressed or implied, as to the specifications or properties of such experimental polymers, or the results to be obtained from their use.

CONFERENCE ON ELECTRICAL ENGINEERING PROBLEMS IN RUBBER INDUSTRY

The Subcommittee on Rubber and Plastics Industries of the Committee on General Industry Applications of the American Institute of Electrical Engineers held a one-day conference on electrical engineering problems in the rubber and plastics industries on May 5, at the Portage Hotel in Akron, Ohio. The conference was sponsored by the Akron Section of the Subcommittee on Rubber and Plastics Industries and was the third in an annual series. Eight papers were presented after which prepared discussions on each were given.

I. E. Andreasen, of the General Electric Co., Schenectady, N. Y., presented a paper entitled "Calender Auxiliary Drives Including Constant Tension Winder Drives for Film and Fabric." Mr. Andreasen said the trend toward making the calendering process a continuous operation has resulted in an increase in the number of auxiliary sections that must be coordinated with the calender. Electric drives with individual motors for each section are well suited for this application. They provide a degree of flexibility not readily attainable with mechanical systems.

If the calendering process is that of coating a fabric with rubber or plastic, then the fabric gives the material sufficient mechanical strength that it can withstand a reasonable amount of tension. For these processes a drive system that is designed to control tension will give more satisfactory results than any attempt to establish tension by maintaining a definite speed relationship between the elements of the calender train.

For calendering processes wherein the web is not supported by a fabric, as in the case of sheeting plastic film, the auxiliary elements must operate with a definite speed relationship to the calender. As these materials leave the calender they are hot and have very little mechanical strength; they cannot be subjected to tension. For these applications speed control is used for the auxiliary elements in order to avoid excessive stretching of the web.

Paper on Industrial Lighting

In a paper on "Industrial Lighting of Factory and Office for Rubber and Plastic Plants," E. A. Lindsay, of the General Electric Co., said the wide range of industrial lighting problems encountered in these industries offer an opportunity to discuss many different lighting techniques.

An analysis of the over-all problem entails a discussion of the many intangible benefits of good seeing, such as improved morale and better employee relations, as well as the measurable benefits of more efficient seeing.

"Choice of Motor Speeds for Rubber Mill Room Service," by J. H. Skeen, of the U. S. Rubber Co., Detroit, Mich., was the next paper to be presented at the conference. Mr. Skeen noted that interchangeability of equipment, conservation of floor space, possible re-application on systems of different frequency, and comparative first cost as affected by repetitive purchase of standardized design are the prime factors which influence selection of motor types, speeds and gear trains used for mill room work in the rubber industry.

Stopping characteristics, comparative operating efficiencies, and maintenance expense also receive consideration. The experience of one large rubber manufacturer in standardizing mill room equipment was discussed in detail by the speaker.

E. B. Sutherland and T. C. Jones of Emmett Machine & Manufacturing, Inc., presented the next paper, which was entitled "Recent Developments in Process Sequence Control." Mr. Sutherland's portion of the paper was devoted to a discussion of centralized systems, and covered the application of a centralized control system such as might be suitable in the rubber and plastics industries. The paper also discussed the need for such centralized control systems, their advantages, and their limitations. In particular, the time-pulse system of control was discussed as to its adaptability, limitations and variations.

Time Cycle Sequence Controller

Mr. Jones offered a discussion of a time cycle controller for passenger tire machines. The speaker observed that many problems are involved in adapting a time cycle sequence controller to tire building machines because the present method of building requires full manual operations, combinations of both operator and machine and automatic operations.

It was shown that a time cycle controller to initiate this type of program must be of a specific design, intricate timing method and a very flexible control over each building operation. Mr. Jones indicated the advantageous and interesting results to be obtained by the use of the time cycle sequence controller.

"The Role of Electronics in the Rubber and Plastics Industries," was presented by E. H. Vedder, of the Westinghouse Electric Corp., East Pittsburgh, Penna. Mr. Vedder presented a resume of the contribution of electronics to the science of measurement and control in the rubber and plastics industry. Applications suitable to some typical problems were outlined by the speaker.

William S. Watkins, of the Ohio Rubber Co., Willoughby, Ohio, presented the next paper which was entitled "Industrial Communication and Paging." Mr. Watkins said technological trends in industry have outdistanced the means of communication in general use, with the result that expensive mechanization in many cases does not produce the expected return. The increased inertia of processing lines handling larger quantities of material at higher speeds makes it increasingly important that various points in the factory have instant, dependable communications with other points.

For several reasons, one of which is the high incidence of one-way messages which require no answer, vocal intercommunicating systems and vocal paging systems are logical means for providing this essential service; but the high ambient noise, and other factory conditions, require that specialists be called in to provide the correct solution to each problem. The clarity and effectiveness with which this specially-designed equipment can cut through factory noise without adding to it must be witnessed rather than described.

Installation in many rubber plants, as well as steel mills, foundries and other notable noisy industries, are proving highly successful and economical, operating year after year with low maintenance cost. An acquaintanceship with the principles and problems involved can assist the plant electrical engineer in assuring adequate fulfilment of present and future communication requirements, he concluded.

Electrostatic Casualties

"Electrostatic Casualties in the Rubber and Plastics Industries," was the subject of a paper presented by Robin Beach of Robin Beach Engineers Associated, Brooklyn, N. Y. The speaker stated that rubber and plastics are susceptible to high electrification. During manufacturing processes, the extensive use of industrial solvents in the presence of electrostatic sparks introduces serious fire and explosion hazards. All electrostatic problems in industry which involve fires, explosions, spoilage of products, slow-downs of production, increased costs, and accidents to operators, can be completely resolved by those who are fully qualified by experience in the specialized technology of industrial electrostatics.

Several types of electrostatic neutralizers, as well as inexpensive specialized techniques developed by the author, are available for eliminating potential sparks —each possessing advantages as well as inherent limitations. Effective economic surveys of electrostatic fire and explosion hazards require careful analyses of performance, installed costs, and maintenance of the mitigating units and systems.

The cost of conducting a comprehensive quantitative investigation of the electrostatic hazards throughout an industrial plant and the cost of applying appropriate mitigating devices and techniques, tailormade to fit best the particular electrostatic needs, have been proven insignificantly small in comparison with the direct and the indirect annual savings which can be realized from the investment.

Discusses New Safety Code

The concluding paper at the conference was presented by E. W. Beck, supervisor of safety for the U. S. Rubber Co., New York 20, N. Y. Mr. Beck spoke on "The New Safety Code for Mills and Calenders in the Rubber Industry." He gave a brief history of the development of the safety code requirements and stated that many changes have been incorporated in the present code.

The most important change has been in connection with the stopping limits of mills and calenders. The new code calls for stopping limits of 2% of the surface speed of the front roll in feet per minute for group-driven mills. For single mills, the limit is 1¾%, he said.

DeLong Named General Manager

Clyde O. DeLong

Clyde O. DeLong, sales manager of the plastics division of the B. F. Goodrich Company, has been named general manager of the division in charge of manufacturing and sales, it has been announced by E. F. Tomlinson, general manager of the company's industrial and general products division. Mr. DeLong, whose headquarters are in the company's plant in Marietta, Ohio, joined Goodrich in 1928, starting as a clerk in the industrial products division. After sales assignments in Chicago and New York, he was named division operating manager and then manager of sundries sales in the industrial products division. In 1946 he became merchandise manager of the division. He was made sales manager of the plastics division in 1949. Mr. DeLong was born in Portsmouth, Ohio, graduated from grade and high schools there, then taught school for three years. He was graduated from Miami university in 1927.

Chicago Plans Summer Outing

The 1950 Chicago Rubber Group Golf Outing has been scheduled for July 28 at the Medinah Country Club, Chicago, Ill. The day's activities will include golfing, swimming and other athletic and social events. The following members have been named to serve on the 1950 Outing Committee: W. A. Fairclough (Enjay), chairman, and Otto Hlavacek (U. S. Rubber), D. E. Smith (Cory), John Groot (Dryden Rubber), R. E. Elliott (Indoil Chemical), C. R. Bierman (American Can), and C. E. Wonder (Van Cleef).

Buffington Named Vice-Chairman

At a meeting of the Executive Committee of the New York Rubber Group, held in New York City on May 17, M. R. Buffington, chief chemist of Lea Fabrics, Inc., Newark, N. J., was elected vice-chairman of the group, succeeding Howard G. Ling. Mr. Ling tendered his resignation of the post because of pending transfer to another territory.

Hi-Tac Latex Adhesives

The development of two new latex adhesives which enable high strength bonds to be secured between rubber and rayon or nylon has been announced by the General Tire & Rubber Co., Akron, Ohio. Designated as Hi-Tac 56-M and Hi-Tac 802, both types of Hi-Tac are recommended for treating cord or fabric to be used in the manufacture of tires, belting, hose or other rubber goods involving a fabric-rubber structure. In preparing commercial dips, these latices may be blended with resorcinol formaldehyde resin solution to obtain high levels of adhesion. Hi-Tac 56-M is a straight synthetic latex, while Hi-Tac 802 is a specially prepared blend based on 56-M, and is considerably lower in cost than the 56-M type. Depending on the particular service requirements, Hi-Tac 56-M may be used alone or may be blended with other synthetic or natural rubber latices. Hi-Tac 802 is generally recommended for use alone without further blending except for the customary addition of resorcinol formaldehyde resin. In addition to their use in latex dips for rayon and nylon, Hi-Tac can be employed as an additive to improve the adhesive properties of standard latex-type adhesives for a variety of applications. A technical bulletin on the Hi-Tac latices covers their method of use and bonding data on single cord rayon and nylon.

New Non-Staining Antioxidant

The Intermediate and Rubber Chemicals Department, Calco Chemical Division, American Cyanamid Co., Bound Brook, N. J., has announced the commercial production of Calco Antioxidant 2246, reported to be the most active, non-staining, non-discoloring antioxidant for rubber developed to date. The new material is a white crystalline powder. It is said to show the lowest net cost for equivalent or better aging qualities than any other product of its classification now on the market. A technical bulletin giving complete data on Antioxidant 2246 is available from the company on request.

Deny Rubber Rotation Stoppage

Government officials have firmly denied the existence of any plans to halt rotation of the government stockpile of natural rubber. Reports were rife in mid-May to the effect that the Federal Supply Service had temporarily halted borrowings from the stockpile. The Munitions Board, which sets stockpiling policy, reported that the Federal Supply Service has made some changes in paperwork procedures, but that "there is no foundation to the report that we are planning to halt rotation of the rubber stockpile."

Interstate Increases Facilities

G. A. McLean of Interstate Welding Service, Metropolitan Building, Akron, Ohio, has announced an increase in production facilities through the utilization of equipment at the Alliance Machine Co., Alliance, Ohio. Interstate's main plant in Akron was recently damaged by fire causing a curtailment in production. The Akron plant is now back on schedule.

Craig Heads New Houston Office

Allen Craig

The Witco Chemical Co. has established an office in the M and M Building in Houston, Texas. Allen Craig, who joined the company in 1946 following his release from the U. S. Navy with the rank of Lieutenant Commander, will be in charge of the new office. Mr. Craig was graduated from Lafayette College in 1939 and spent two years with the Glidden Co. as a production supervisor before joining the Navy. The Continental Carbon Co. also has opened offices in the same building, with John H. Wishnick in charge. Mr. Wishnick is a director of both the Witco Carbon and Continental Carbon companies.

Introduce New Zinc Oxide

Protox-167, a new zinc oxide said to be an all-purpose oxide for the activation and reinforcement of many types of rubber products, was recently introduced to the trade by the New Jersey Zinc Co. The new pigment is the second in the modern line of coated zinc oxides developed by the company. Features claimed for Protox-167 include lowest moisture pick-up, lower dry bulking, minimum dusting, scorch inhibition, plasticizing effect, higher reinforcement, and minimum progressive cure even with persistent accelerators.

Reduce Acrylic Emulsion Prices

Sharp price reductions, some in excess of 27%, have been announced by the Resinous Products Division of Rohm & Haas Co., Philadelphia, Penna., on four of its line of Rhoplexes, the acrylic resin emulsions used in the rubber, coatings and paper industries. The four emulsions involved are Rhoplexes WN-80, FRN, ER, and WC-9. The price on Rhoplex WN-80 was the one most drastically reduced. The reductions were effective June 1, 1950.

The recent installation of an electron microscope at its Hoboken, N. J., plant has been announced by the U. S. Testing Co. The company is now in a position to resolve specimens having diameters of less than one-half the wavelength of light.

RUBBER EXPORTS DECLINE 13.6% DEPARTMENT OF COMMERCE STATES

Rubber exports for the year 1949 were valued at $114,429,488, a decline of 13.6% from the $132,423,517 figure of 1948, according to an analysis of Bureau of the Census statistics by the Office of Domestic Commerce of the Department of Commerce. The 1949 total was $100,000,000 below the record 1947 figure of $214,515,747, and was the lowest figure since 1942, when rubber goods valued at $64,463,982 were exported. However, it was still almost four times the 1935-1939 average of $28,841,232.

Throughout 1949, exports of mechanical rubber goods (belting, hose, and packing) and footwear, soles and heels lagged far behind the previous year, and the 1949 totals represented declines of 40.8% and 38.9%, respectively, from the 1948 figures. Other categories of rubber exports showed smaller decreases, ranging from 21.6% for passenger car casings, to 2.2% for gloves, drug sundries, etc. The "all other" category showed a small increase of 1%.

The decline in exports of mechanical rubber goods was chiefly traceable to belts and belting, shipments of which dropped from $14,568,321 in 1948 to $16,708,028 in 1949. Shipments of rubber-soled canvas shoes, and rubber boots and shoes, fell off sharply in 1949 but exports of soles and heels held up fairly well. Exports of each of the synthetic rubbers showed value increases in 1949 over 1948. Most important were increases in N-type, from $805,696 to $1,642,797, and in neoprene, from $2,149,806 to $2,589,373.

Exports of transportation goods, including tires, tubes, camelback and tire repair materials, constituted 62.1% of all rubber exports in 1949, as against 59.8% in 1948. The following table shows the value of rubber exports, by product category, for the years 1948 and 1949:

U. S. EXPORTS OF RUBBER, ALLIED GUMS, AND MANUFACTURES

Product	1949	1948
Synthetic Rubbers	$5,233,159	$3,665,791
Reclaim	1,806,286	2,033,053
Scrap	1,448,955	1,523,286
Rubberized Fabrics and Cement	2,231,693	2,465,351
Footwear, Soles and Heels	3,030,552	4,958,113
Gloves, Drug Sundries, etc.	7,801,594	7,975,813
Truck and Bus Casings	45,605,780	50,260,133
Passenger Car Casings	7,031,649	8,967,376
Off-the-Road Casings	3,346,724	*a*
Farm Tractor and Implement Casings	4,909,465	*a*
Other Tires, Tubes, Camelback, and Tire Repair Materials	10,196,537	19,973,021
Belting, Hose and Packing	12,925,177	21,829,778
All Other	8,861,917	8,771,802
Totals	114,429,488	132,423,517

a Not separately reported in 1948; included in other tires and tubes

Goodyear Expands Pliovic Line

A $2,250,000 expansion program to quadruple the output and enlarge its lines of Pliovic vinyl resins has been announced by the Goodyear Tire & Rubber Co. The expansion will be made at the company's Chemical Division subsidiary, the Pathfinder Chemical Corp. at Niagara Falls, N. Y. Potential production figures were not released. The expanded program will place the Goodyear company among the nation's leading producers of vinyl resins. Present and new resins produced by the Pathfinder concern will be used in the manufacture of cast and calendered film for rainwear, drapery material and like items, in sheet form, in extruded and molded goods, in the coating of paper, fabrics and metal parts. Goodyear's General Products Division at Akron uses Pliovic Resins for films, floor and custom kitchen counter covering, and vinyl hose.

Oil Industry Pipe Protectors

Development of a new line of all-purpose pipe protectors for the oil industry has been announced by the U. S. Rubber Co., New York 20, N. Y. The company has also announced the appointment of the Goode Equipment Co. of Houston, Texas, as distributors for the new line in the Southwestern section of the country. The new pipe protectors are specifically designed to prevent casting and tool joint wear and to lower vibration, friction and torque during drilling operations. They are constructed of oil-resistant rubber compounds which can be used with all types of drilling mud. Field tests have indicated that the protectors have exceptional resistance to cutting, abrasion, swelling, and the deteriorating effects of oil and acid.

Ram Speed and Stroke Time Chart

Recognizing the fact that most rubber and plastic molding firms are keenly interested in increasing their ram speeds, the Sinclair-Collins Valve Co., 454 Morgan Ave., Akron 11, Ohio, has prepared a Ram Speed and Stroke Time Chart to be used in conjunction with their two-pressure valves. The chart gives ram speeds in inches per minute and stroke time in seconds for pressures of 100 psi to 1,000 psi for ram diameters of 8 to 36 inches. Ram speed increases up to 57% have been reported by the proper selection of Sinclair-Collins two-pressure valves.

Secures Patent on Nylon Shield

A patent on the nylon shock shield which it uses in all its truck and bus tires has been assigned to the B. F. Goodrich Co., Akron, Ohio, by the United States Patent Office. The "shock shield" consists of rubber-coated nylon cords between the tread and the inner cord plies, protecting them from bruising by sharp impacts. Advantages which the company cites are that tire mileages are increased, more tires can be recapped, tires have greater resistance to bruising, and the danger of tread separation is lessened.

ELASTIC PROPERTIES OF LIQUIDS IS SUBJECT OF TECHNICAL TALK

Dr. Prince E. Rouse, Jr., Emerson D. Bailey, and Jean A. Minkin, members of the staff of the Franklin Institute Laboratories for Research and Development, Philadelphia, Penna., presented a paper entitled "Factors Affecting the Precision of Viscosity Measurements with the Torsion Crystal" at the recent meeting of the American Petroleum Institute in Cleveland. They disclosed the factors and technique required to obtain high precision with the Torsion Crystal Method for studying the elastic properties of liquids. This method was introduced by Dr. W. P. Mason of the Bell Telephone Laboratories, about three years ago.

In the usual methods for measuring viscosity a liquid is subjected to a steady shearing force. In the new method the direction of the shearing force is reversed 20,000 or more times a second. This rapid reversal of the direction of the shearing force is obtained through the use of piezoelectric crystals, which have proven so valuable in radio and telephone work.

In a recent paper it was shown that the fine wire which supports the piezoelectric crystal must be atached to the crystal firmly, but in such a way as to produce the least possible interference with the motion of the crystal. If adequate precautions are observed, measurements with the new method can be made with a precision of about 0.2 per cent.

The new technique has already shown great promise in interesting studies of the properties of the giant molecules which make up polymers, such as natural and synthetic rubber and plastics. The method owes its effectiveness to the fact that the changes in direction of the applied force take place so rapidly that the large molecules do not have time to respond in the same way they do to a steady force. As a consequence of this altered response, conclusions can be drawn about the structure of the molecule.

Giffels & Vallet Houston Office

Giffels & Vallet, Inc., and L. Rossetti, Associated Engineers and Architects, of Detroit, Mich., have announced the opening of a new district office at 2121 Commerce Building, Houston, Tex., under the direction of Col. William P. Cornelius. Col. Cornelius was previously chief of the Construction and Maintenance Division of the Hanford Atomic Energy Project at Richland, Wash. He has also been associated with atomic energy developments at Oak Ridge, Tenn.

U. S. Testing Moves N. Y. Office

United States Testing Co., Inc., has moved its offices in New York City from 1450 Broadway to the McGraw-Hill Building, 330 West 42nd St. The new office will be managed by Thomas C. Ridgway of the company's Service Division. U. S. Testing has its main laboratories and offices at Hoboken, N. J., and eight other branches throughout the country.

NAMES IN THE NEWS

A. H. STRUNCK, who joined the Wooster Rubber Co., Wooster, Ohio, as assistant sales manager last year, has been named sales manager of the Rubbermaid houseware division.

R. C. STEIN, associated with the Goodyear Tire & Rubber Co. since 1943, most recently as a sales representative in the Indiana territory, has been named manager of molded goods sales at the St. Marys, Ohio, plant.

CHARLES P. JOSLYN, associated with the Goodyear Tire & Rubber Co. since 1926, most recently as manager of the General Products Division, has left the company to enter business with his two sons.

L. C. HERKNESS, president of the Charles Eneu Johnson Co., of Philadelphia, Penna., has been elected a director of the parent company, the United Carbon Co.

CHARLES L. FREEL, formerly manager of the Detroit office of the Lord Manufacturing Co., has been named administrative assistant to General Sales Manager GEORGE E. TUBB. He will make his headquarters in Erie, Penna.

W. B. REYNOLDS has been named assistant director in charge of the Chemicals and Rubber Branch of the Research and Development Department of the Phillips Petroleum Co.

DR. C. F. RASSWEILER, vice-president in charge of research and development of the Johns-Manville Corp., was recently elected president of the Industrial Research Institute.

L. R. "LARRY" SPERBERG, formerly associated with the Philblack Sales Division of the Phillips Petroleum Co., has joined J. M. Huber, Inc., at Borger, Texas.

KARL H. REIMOLD, long associated with the chemicals field, has been named vice-president and general manager of the Woburn Chemical Corp., Harrison, N. J.

GILBERT MACINTOSH, formerly associated with Messrs. P. B. Cow & Co., Ltd., in England as chief buyer, has joined the Clyde Rubber Works Co., Ltd., of Renfrew, Scotland.

E. E. ELLIES, formerly assistant manager of the General Products Division of the Goodyear Tire & Rubber Co., has been named manager of the company's Film and Flooring Department.

PAUL GILBERT, from 1943 to 1947 a research chemist with the Firestone Tire & Rubber Co., was recently ordained a Presbyterian minister.

DAVID DUKE COCHRANE, managing director of Cabot Carbon, Ltd., in England, has been elected a vice-president of Godfrey L. Cabot, Inc., of Boston, Mass., the parent company.

HENRY W. WILLARD, associated with the U. S. Rubber Co. for many years, has been named general superintendent of all production departments at the Passaic, N. J., plant.

GEORGE W. STEPHENS, chairman of the board of the Mansfield Tire & Rubber Co., was recently feted on his 70th birthday. Some 2500 employees of the company signed greeting cards.

PAUL W. LITCHFIELD, chairman of the board of the Goodyear Tire & Rubber Co., recently received a special award from Air Service Post 501 of the American Legion in recognition of his 40 years in aviation. The presentation was made at the Navy Air Station in Lakehurst, N. J.

FORD BALLANTYNE, JR., previously assistant to the president and secretary of the Wyandotte Chemical Corp., has been elected a vice-president of the company.

HOWARD L. SANDERS, secretary of the Commercial Solvents Corp., has been elected a vice-president of the company in addition to his other duties.

HENRY M. WILAND, formerly a purchasing agent and a division superintendent in the Java plant of the Goodyear Tire & Rubber Co., has returned to company headquarters in Akron for reassignment.

H. R. COMSTOCK, associated with the Goodyear Tire & Rubber Co. since 1929, has been appointed as manager of the Central Division of Mechanical Goods Sales succeeding H. E. LANGDON, whose new duties have not been assigned.

C. H. MADSEN, formerly associated with the Canadian Synthetic Rubber Co., Ltd., as plant manager, has been named assistant to the operations manager of the Synthetic Rubber Division of the U. S. Rubber Co.

J. P. SEIBERLING, president of the Seiberling Rubber Co., has been elected to the combined post of president and chairman of the board of directors of the company.

EUGENE SCHALL, for many years active in sales and management in the rubber industry, has been named district sales manager for the state of Wisconsin representing the Minnesota Rubber and Gasket Co. His headquarters are located in Milwaukee, Wisc.

Managing Quaker Rubber Corp.

J. R. Keach

J. R. Keach, who has been associated with the industrial rubber field for the past twenty-five years, has been appointed general manager of the Quaker Rubber Corporation of Philadelphia, Penna. Quaker Rubber recently became a division of the H. K. Porter Co., Inc., of Pittsburgh, Penna. During his 25 years in the field, Mr. Keach has been purchasing agent for the Ohio Rubber Co., general plant manager for the Firestone Industrial Products Co., and directional sales manager for the Hamilton Rubber Corp. Mr. Keach is a graduate of Butler University. He is a member of Sigma Chi and a past president of the Purchasing Agents Association of Cleveland. Mr. Keach is married, has three daughters, and hails originally from Seymour, Ohio.

E. V. MURPHREE, president of the Standard Oil Development Co., was elected to membership in the National Academy of Sciences at the recent annual meeting of the Academy in Washington, D. C.

CARL F. SCHNUCK, who recently completed 50 years of service with the Farrel-Birmingham Co., has been appointed director of engineering for the company. WARREN C. WHITTUM, associated with the company since 1930, has been named chief engineer of the company.

RALPH W. DOWDELL, former vice-president of the Cartex Corp., Morrisville, Penna., has been named treasurer of the company succeeding JOHN JURECHKO who has left the company.

HERMAN E. BAKKEN, associated with the Aluminum Co. of America since 1919, has been named vice-president and general manager of the Aluminum Ore Co., effective August 1, 1950. Aluminum Ore is a wholly-owned subsidiary.

GEORGE M. POWELL, III, technical head of Vinyl Coatings Research for the Union Carbide and Carbon Corp., South Charleston, West Virginia, has been presented with the John Wesley Hyatt Award for distinguished achievement in plastics.

FINANCIAL NEWS

Electric Auto-Lite Co.

First Quarter: Net income of $1,629,446, equal to $1.09 on 1,494,855 capital shares, as compared with $2,203,853, or $1.47 on an equal number of shares, in the first quarter of 1949. Net sales dropped from $52,321,549 in the 1949 quarter to $37,486,817. The reduced sales and earnings in the 1950 quarter were attributed to the long strike against the Chrysler Corporation. Inventories at the end of March increased by approximately $10,000,000 over the year-end figures.

Columbian Carbon Company

First Quarter: Consolidated net earnings of $1,443,566, on sales of $10,972,861, which is equal to 90 cents a share, which compares with $2,575,002, or $1.60 a share, shown for the initial quarter of 1949. The report pointed out that the 1949 March quarter statement included $1,429,608 profit from the sale of an investment in the Mississippi River Fuel Corp.

Minnesota Mining & Mfg. Co.

First Quarter: Net income of $4,693,065, on sales of $32,241,032, which is equal to $2.33 a share, and which compares with $3,215,250, on sales of $26,835,369, or $1.58 a share, for the corresponding quarter of the previous year. The consolidated sales for the quarter reflects activities of the Inland Rubber Corporation only for the period prior to its sale on February 25, 1950.

B. F. Goodrich Co.

First Quarter: Net income of $5,332,445, which is equal to $3.69 a common share, compared with $3,720,933, or $2.45 a share in the first quarter of the preceding year. Consolidated net sales for the first quarter of 1949 rose 12.7% to $104,264,454, from $92,490,862 in the same period of 1949.

DeVilbiss Co.

First Quarter: Net profit of $78,142, which is equal to 26 cents a share, compared with $106,013, or 35 cents a share, in the corresponding period of 1949.

Anaconda Wire & Cable Co.

First Quarter: Net profit of $874,867, which is equal to $1.04 a share, contrasted with $1,381,370, or $1.63 a share, for the first quarter of 1949.

Belden Manufacturing Co.

First Quarter: Net income of $323,185, which is equal to $1.01 a share, compared with $157,301, or 49 cents a share, for the same quarter a year before.

National Automotive Fibres, Inc.

First Quarter: Consolidated net profit of $476,386, which is equal to 48 cents each on 996,145 capital shares, compared with $848,405, or 89 cents each on 953,779 capital shares, in the first quarter of 1949. Sales for the quarter amounted to $11,684,323, against $13,945,711 the year before. Figures for 1950 include business of the California Cotton Mills Co. which was merged with National on August 1, 1949.

B. F. Goodrich Co.

First Quarter: Net income of $5,332,445, after Federal and foreign income taxes and after provision of $1,000,000 reserve for increased replacement cost of facilities, which is equal to $3.69 a share, and which compares with $3,720,933, after similar provisions, or $2.45 a share, in the first quarter of 1949. Net sales amounted to $104,264,454 as against $92,490,862 in the 1949 quarter.

Lee Rubber & Tire Corp.

Six Months to April 30: Net profit of $816,361, which is equal to $3.22 each on 253,584 capital shares, compared with $743,963, or $2.93 each on an equal number of shares, in the first half of the preceding fiscal year. Net sales in the six months ended April 30, 1950, totaled $13,918,560, against $15,503,592 for the six months ended April 30, 1949.

Rome Cable Corp.

Year Ended March 31: Net profit of $302,209, which is equal to 61 cents each on 382,300 common shares, compared with $1,115,960, or $2.78 each on 375,475 common shares, for the previous fiscal year. Net sales for the year ended March 31, 1950, totaled $19,602,984, against $26,088,523 in the preceding fiscal year.

New Jersey Zinc Co.

First Quarter: Net profit of $253,899, which is equal to 13 cents each on 1,960,000 capital shares, against $2,760,184, or $1.41 each on the same number of capital shares, in the corresponding quarter of 1949.

United Carbon Company

First Quarter: Net income of $825,826, or $1.04 a share, which compares with $726,507, or 91 cents a share, in the corresponding quarter of the previous year.

Ohio-Apex, Incorporated

Six Months to April 30: Net profit of $290,031, equal to 58 cents a share, as compared with $349,311, or 70 cents a share, in the same period a year earlier.

Oppose Shoe Tariff Changes

Manufacturers of rubber foot wear in the United States are strenuously objecting to contemplated changes in the method of determining custom duties on imported footwear. Under the present system, American selling prices are used as the basis on which the duties are levied. The Tariff Commission proposes to adopt a new system which it states would result in the same amount of duty but on another basis. What the domestic industry fears is the possibility that any new basis adopted might be open to revised custom rates based on presidential negotiations. A bill, which is reported to be in line with the Geneva Agreement of 1947, is now before the House Ways and Means Committee. The bill orders the Tariff Commission to study the question of tariffs and report to the President a schedule of duties exactly the same as those currently being collected. Both houses in the Massachusetts State Legislature have adopted resolutions condemning any move that might result in reduced tariffs on rubber footwear.

DeVilbiss Planning New Factory

The DeVilbiss Co., manufacturers of air compressor outfits and spray painting equipment, and one of the world's leading producers of atomizers, which were invented by the company's founder more than 60 years ago, will soon establish a modern manufacturing plant in Somerset, Pa. The early start of operations in Somerset will greatly improve the company's competitive position, result in closer cooperation with many of its major suppliers and permit more rapid and economical distribution to its customers, the company announcement said.

Wetherbee Chemical Moves Office

Wetherbee Chemical Co., formerly located at 525 Washington Avenue, Buffalo 21, N. Y., has moved its general offices to 1510 South Park Avenue, Buffalo 20, N. Y. The new telephone number is Woodlawn 5091.

Thermoid Company

First Quarter: Net income of $270,847, which is equal to 31 cents a common share, compared with $279,139, or 32 cents a share, for the first quarter of the preceding year.

Textileather Corp.

For 1949: Net profit of $500,302, which is equal to 85 cents a common share on net sales of $13,469,753, against $373,859, or 63 cents a share on net sales of $12,216,998, in 1948.

Pantasote Company

First Quarter: Net profit of $18,961 on sales of $1,315,195, which is compared with $10,138 on sales of $1,217,487 in the corresponding quarter of the previous year.

Three Advanced by Monsanto

Appointment of Monte C. Throdahl as research supervisor in rubber chemicals has been announced by Dr. W. P. Metzner, director of research for Monsanto Chemical Company's Rubber Service Department. Appointments of Paul M. Downey and Marion Harman as group leaders were simultaneously announced.

Mr. Throdahl, who joined Monsanto at Nitro, West Virginia, in 1941 after receiving a B.S. degree in chemical engineering from Iowa State University, has served during the past year in a liaison capacity between the research and sales departments of the Rubber Service Department. He will continue this assignment together with supervision of the rubber chemicals laboratory, and will assume added responsibilities for rubber chemicals and control laboratory operations.

Mr. Downey joined Monsanto at Nitro in 1938, after receiving a M.S. degree in chemistry from the University of New Hampshire. He was transferred to the rubber laboratory of the research department in 1939. From 1942 to 1945 he served in the Army Air Forces and since the latter year has been engaged in synthetic organic research.

After nine years' service in the research department of the Miller Rubber Company, Akron, Ohio, Mr. Harman joined the Nitro research department in 1929. He was graduated from Ohio State University in 1920 with a B.S. degree in chemical engineering. He has been engaged largely in the synthesis of rubber chemicals, with particular emphasis on accelerators, and will assume added responsibilities in this field.

Tire Prices Increased Again

Increases of 2½% on both conventional and low pressure passenger car tires and 5% on truck tires have been instituted by tire manufacturers. The increases were first announced by the U. S. Rubber Co. on May 23, and were quickly followed by announcements from Goodyear, Goodrich, General Tire, and Seiberling Rubber. The increases, which were effective immediately, were attributed to the advancing cost of natural rubber. The U. S. Rubber statement pointed out that such cost has gone up by 65% in the last six months. The increases were the third to be announced in the past six months.

Predicts Increase in Tire Sales

In a talk before the Painesville, Ohio, Chamber of Commerce on May 24, Harry E. Humphreys, president of the U. S. Rubber Co., forecast an increase of 2,000,000 units in tire sales for the current year. He estimated that passenger car tire sales will amount to 66,000,000 units this year as against the 64,557,000 sold in 1949. Of these, he indicated that approximately 27,000,000 will be original equipment tires and the balance, 39,000,000, replacement tires. Total industry volume on rubber goods should reach $3,400,000,000 in 1950, Mr. Humphreys stated, as compared with the $3,200,000,000 last year.

Cacao Replacing Rubber

Approximately 30,000 acres of low-yielding rubber estates in Ceylon were planted in cacao during the past three years, according to the American Embassy in Colombo. The cacao plantings were undertaken in several districts northeast of Colombo for the purpose of establishing an erect cover for the benefit of the rubber trees. When the yield of rubber in this area became hopelessly low as a result of years of defoliation by Oidium disease, it was decided to concentrate on cacao and eliminate the rubber trees.

Fabric-Foamed Latex Combinations

A new combination of thin gauges of latex and a variety of fabrics is currently being offered by the Andrews-Alderfer Processing Co., Inc., Akron 8, Ohio. Unlike previous offerings, the new material is not laminated. Called "Foam-Fab," the fabric in the new material is imbedded in the foamed latex prior to its vulcanization. The latex penetrates the fabric and a firm physical union is produced. Since no adhesive is used, the natural porosity of the foam and fabric is retained, with the combination "breathing" freely. The foamed latex is made to the gauge required with fabric on one surface and a "skin" on the other. The resulting finish is not obtainable with split foam laminates, according to the company. It is pointed out that the integrated foam in gauges from 3/32-inch to ¼-inch provides a base for light fabrics, giving them stability, wrinkle resistance, and body. Satins, failles, twills and similar fabrics become practical for upholstery, mattresses, seat covers, sock linings, etc. Fabrics processed cover a wide range, including rayons and nylons. Foam-Fab is sold as yardage goods for numerous uses.

Consumption Dropped in April

Consumption of new rubber in April decreased to 95,847 long tons from the 98,414 long tons in March, a drop of 2.61%, according to the Rubber Manufacturers Association. Use of natural rubber in April amounted to 57,879 long tons, a drop of 4.82% from the 60,809 long tons consumed in March, while consumption of synthetic rubber increased from 37,605 long tons in March to 37,968, a gain of 0.97%. Consumption of reclaimed rubber was estimated at 21,709 long tons in March, a drop of 2.59% from the March figure of 22,286 long tons.

Set Dates for Spring Meeting

The Spring Meeting of the Division of Rubber Chemistry, A.C.S., will be held in Washington, D. C., on February 28 and March 1 and 2, 1951. R. J. Devereaux, Washington representative of the B. F. Goodrich Co., has been named chairman of the local arrangements committee.

Details on Enrup Plastic

Details concerning Enrup, a tough new plastic which is said to bridge the gap which has existed between soft and hard rubber for almost a century, have been revealed by the U. S. Rubber Co. The material has been under development and test for some time and is said to fulfill the urgent need for a high strength material which is resistant to abrasion and chemicals and at the same time can be produced in varying degrees of flexibility.

Properties of Enrup include the following: Specific gravity, 1.3; tensile strength, 4,200; Rockwell hardness, 65; impact strength (ft. lb./in. notch), 1.3; modulus of elasticity, 180,000. It is resistant to hot and cold acids, hot and cold alkalis, solvents and gasoline, with fair resistance to fire. Safe operating temperatures, depending on application, range from 0° to 250° F. Electrical properties include a dielectric strength (volts/mil) of 500, a dielectric constant of 9, a power factor of 0.20, and good arc resistance.

It is available in the form of sheets, rods, tubes, gear blanks and as molded parts. One of its outstanding uses is for the manufacture of high strength, low-cost gears to replace metal gears in such applications as heavy-duty lathes, household appliances, plating barrels, etc. It is particularly suited for washing machine parts.

Enrup is now in production in both the Fort Wayne, Ind., and Passaic, N.J., plans of the company. Ample manufacturing capacity is available since it can be produced on standard rubber processing equipment.

Hold Open House at Stamford

The first "open house" since the unit was first established in 1936 was held on May 19 by the Stamford Research Laboratories of the American Cyanamid Co. The event gave friends and associates of the company an opportunity to visualize the increasingly important role that scientific research is today playing in the development of modern industry and agriculture. Visitors walked more than two miles to see the highlites of the scientific work which American Cyanamid is accomplishing. The laboratory buildings are spread over an area of 40.6 acres; floor space alone consists of 410,000 square feet, or more than 9.6 acres; approximately 800 people are employed, 400 of whom have technical degrees.

Grotta Heads Hatfield Unit

Directors of Continental Copper & Steel Industries, Inc., have elected Louis W. Grotta as vice-president in charge of the Hatfield Wire and Cable Division at Hillside, N. J. Mr. Grotta has been with Hatfield Wire and Cable since 1928 and under a new contract which runs for ten years will be responsible for the operation of the company's insulated wire and cable business.

CANADIAN NEWS

Though the government has every assurance of cooperation from the Rubber Association of Canada, little progress has been made in connection with the recommendation made by the Industrial Preparedness Committee on Rubber in the fall of 1948 that Canada acquire a national stockpile of 40,000 tons of natural rubber, Greig B. Smith, manager and secretary, reported at the recent annual meeting of the Association held in Toronto.

"The most recent information from Ottawa is that the matter is being considered on the basis of acquiring a 10,000-ton stockpile," Mr. Smith reported. "The industry, through your association, has assured the Government of every reasonable assistance in acquiring and rotating the proposed stockpile, and there the matter rests."

The committee's survey of the Canadian rubber industry's chemical requirements with a view to assisting a study of the desirability and practicability of initiating or expanding production of essential chemicals in Canada for security reasons is well in hand, he added.

Japanese dumping became a problem during 1949, and was particularly acute in the case of bicycle tubes, the manager stated. Dumping duties have been applied against these tubes imported at lower than specified prices, and special attention of the industry is to be directed to imports from Japan and Czechoslovakia during 1950.

At the same time, Canada's exports of rubber and rubber goods fell from $33,150,000 in 1948 to $25,780,000 last year. Of these totals, $8,644,000 and $13,171,000, respectively, was made of synthetic crude, which means that export of rubber manufacturers dropped more than 50% last year.

While the industry has been accustomed to think of the British Empire as the mainstay of its export trade, it must change its thinking under present conditions, it was pointed out. The prewar ration of 66% Empire to 34% others changed last year to 15% Empire and 85% others, Mr. Smith reported.

"If it can be said the future of our exports has a bright side, it appears to lie in the fact that in 1949 the industry was able to double the value of its prewar shipments to non-Empire countries," said Mr. Smith. "It is suggested that these markets might repay more intensive cultivation than they have as yet received."

An indication of the return of a buyer's market on the domestic front is seen in the introduction of a limited range of second-line tires, the manager's report pointed out. Another development domestically is the change from 6.00-16 to 6.70-15 as the heaviest selling passenger car size tire.

C. C. Thackray, president, Dominion Rubber Co. Ltd., Montreal, was named president, with M. L. Brown, president, Seiberling Rubber Co. of Canada Ltd., Toronto, vice-president. R. C. Berkinshaw, vice-president and general manager of Goodyear Tire & Rubber Co., Ltd., New Toronto, is treasurer. Greig B. Smith was renamed manager and secretary.

Harry S. Pritchard has been appointed general sales manager for the Dunlop Tire and Rubber Goods Company, Limited, Toronto, it has been announced by David B. Collett, vice-president and general manager of the firm. Associated with the Dunlop company for over twenty years, Mr. Pritchard has been sales manager of two important divisions, and before that was chief chemist for the firm.

Alan L. Francis, of the Goodyear Tire & Rubber Co. of Canada, Ltd., was recently elected president of the Purchasing Agents' Association of Toronto.

There has been a steady increase in the usage of synthetic rubber in Canada in relation to natural rubber during recent months. Throughout most of 1949, prices of synthetic and natural rubber were pretty well on a par, a spokesman said. But in the last month or so, natural rubber has moved up seven or nine cents.

During the past two years there had been a steady tendency for consumption of natural rubber to increase at the expense of synthetic. In November, 1949, the percentage of synthetic, in relation to the overall consumption of new rubber, was 29.6 and in December this figure fell to 29, its lowest level. In January 1950, however, the proportion of synthetic used rose to 29.7%, while in February it went to 30.6%.

The February consumption ratio is the latest available, it is explained, as rubber goods manufacturers do not care to publicize such industrial data among competitors. But the trend of the price of crude rubber has been so much higher in recent weeks, it is said, that there is little doubt the usage of synthetic has broadened into more goods for which natural rubber had been preferred.

Rubber futures rose in New York recently from 95 to 115 points, in company with higher London and Singapore cables. This means, the Toronto informant said, about one cent per pound, and would make a price of around 26 cents in U. S. funds. To this has to be added 10% or 2.6 cents for exchange, making a total of 28.6 cents Canadian, plus transportation and other charges.

The price of synthetic rubber, on the other hand, has held steady for the past few years at about 18.5 cents. This differential compels the use of synthetic rubber in many products, it is pointed out.

Harry S. Pritchard

Named General Sales Manager of Dunlop Tire & Rubber Goods Co.

Consumption of rubber increased 5% during March at 15,097,200 pounds, compared with 14,317,600 in February, the Bureau of Statistics reports. Natural rubber consumption increased to 8,772,400 pounds from 8,265,000, synthetic to 3,772,400 pounds from 3,653,900, and reclaimed rubber to 2,552,400 pounds from 2,398,600.

Domestic production of synthetic and reclaimed rubber moved higher in March, the former advancing to 11,849,600 pounds from 9,732,800, and the latter to 721,300 pounds from 651,800.

Month-end stocks of natural rubber rose to 11,161,900 pounds compared with 11,119,400 the previous month, while synthetic declined to 9,206,400 pounds from 9,632,000 and reclaimed to 3,599,700 pounds compared with 3,796,800.

Chester A. Emerson, general manager, and W. G. MacKenzie Robinson, secretary-treasurer, have both been elected members of the board of directors of Barringham Rubber & Plastics, Ltd., Toronto.

Philadelphia Hears Robinson

Approximately 90 members and guests attended the meeting of the Philadelphia Rubber Group which was held on May 12 at the Poor Richard Club in Philadelphia. Dr. Howard A. Robinson, manager of the Physics Department of the Armstrong Cork Co., was the principal speaker. Dr. Robinson recently completed a year's service as a special attache to the U. S. State Department in Sweden and other countries and delivered a talk on "Living in Europe Today." He gave an interesting lecture concerning the political, economic and social aspects of current life in Europe, which was followed by a lively 45-minute discussion period. A March of Time movie on Sweden was also presented. It was announced at the meeting that the group had decided to hold three meetings and a summer outing during 1950. Precise dates and places will be announced shortly.

OBITUARIES

Edward W. Stephens

Edward W. Stephens, manager of belting sales for the Goodyear Tire & Rubber Co., died at his home in Akron on May 8 at the age of 51. Born on January 8, 1899, in Columbus, Ohio, Mr. Stephens was a freshman at Ohio State University when he entered the army in World War I, serving as a second lieutenant. He returned to Ohio State in 1919, graduating in 1923 with a degree in mechanical engineering. He began his engineering career with the Bonny Floyd Steel Foundry and joined Goodyear in 1928 as a salesman for the mechanical goods division. In 1933 he was sent to the Chicago area and in 1934 was named manager of the belting sales department in Akron. Known throughout the industry for his complete faith in the feasibility of overland conveyor belts for hauling bulk cargoes, Mr. Stephens died before realizing his fondest dream—building the belt for the proposed two-way conveyor system to reach from Lake Erie to the Ohio River. Among the tough belting jobs he supervised in recent years were those at the Grand Coulee, Shasta, Anderson Ranch and Bull Shoals dams. A widow and two sons survive.

Charles Traxler

Charles Traxler, formerly associated with the B. F. Goodrich Co. and the American Hard Rubber Co., died on May 14 at City Hospital in Akron. He was 89 years old. He was one of the few men still alive who had been associated with the late Dr. Benjamin F. Goodrich, founder of the Goodrich company. A native of Manchester, Ohio, Mr. Traxler started to work as a timekeeper with Goodrich in 1884. Later, he went to American Hard Rubber as manager. He represented this firm in London, England, for 10 years. Services were held on May 16 at the McGowan-Reid Funeral Home in Cuyahoga Falls, Ohio, with interment in Glendale Cemetery, Cuyahoga Falls. His son survives.

Merle M. Huff

Miss Merle M. Huff, assistant treasurer of the Mohawk Rubber Co., Akron 5, Ohio, died on May 2, four days before she was to receive her 35-year service pin from the firm. Miss Huff, believed to have been one of the few women executives in the rubber industry, was assistant treasurer for 20 of her 35 years with the company. Born in Mansfield, Miss Huff was 59 years old at her death. She was a member of the Quota Club and Eastern Star. Services were held on May 5 in the Billow Chapel in Akron, with interment in Rose Hill Burial Park, Akron. Her brother survives.

Henry T. Gillen

Henry T. "Hank" Gillen, former consulting superintendent of the Goodyear Tire & Rubber Co., died at his home in Akron, Ohio, on May 23. He was 70 years old, and had been retired for the past two years. At the time of his retirement he had been a Goodyear employee for 47 years. He joined the company in 1901 in the shipping room and rose to be foreman of the shipping room, general foreman of solid tire production and moved to a division foreman's post in 1914. He was named superintendent of the service divisions in 1918 and 8 years later was promoted to the post of superintendent of Plant I. He moved to Plant II in 1932 in a similar capacity. In 1936 he returned to Plant I, where he served as superintendent until 1940, when he was appointed consulting superintendent. Born in Akron on January 5, 1880, he attended Kent School and a local business college. He was a member of Joppa Masonic Lodge, Knight Commandery and the Elks. Mr. Gillen is survived by his wife and two children.

George L. Winder

George L. Winder, general manager of the Killian Manufacturing Co., Akron, Ohio, died at his home in that city on May 25. He was 45 years old. He had been ill of cancer for the past year. Mr. Winder was formerly production manager for American Anode, Inc., and once was a chemist with the B. F. Goodrich Co. Born in Chester, W. Va., Mr. Winder came to Akron in 1925 after studying chemistry at Washington and Jefferson University. He began laboratory work at American Anode in 1928 and became production manager a few years later. He moved to Killian as general manager three years ago. Mr. Winder was a member of the Fairlawn Country Club, Akron City Club, and the Church of Silver Lake. Services were conducted on May 27 at the Billow Funeral Home in Akron with burial in Maple Grove Cemetery, Granville, Ohio. His wife and two daughters survive.

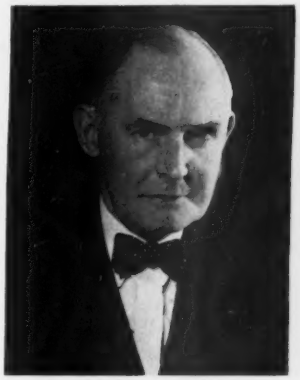
Thomas McCarty

Thomas McCarty, retired manufacturer of rubber products, died at his home in Darien, Conn., on May 7. He was 73 years old. Mr. McCarty had been a member of the Darien Town Finance Board and was a former president of the Tokeneke Country Club. Born in Warrenton, Va., his clubs included the Wee Burn, Ox Ridge Hunt and New York Riding. His wife and two daughters survive.

Col. David M. Goodrich

Colonel David Marvin Goodrich, honorary chairman of the board of the B. F. Goodrich Co. and one of the country's outstanding industrialists, died at his home in Mt. Kisco, N. Y., on May 17. He had been in poor health for several years.

Colonel Goodrich was born June 22, 1876, in Akron, Ohio. He was the son of the founder of the company which he headed as chairman of the board from



1927 until last month, when he was elected honorary chairman. He continued to serve as a director and a member of the company's executive committee.

Widely known throughout industry, Colonel Goodrich was a trustee of the National Industrial Conference Board, and was its chairman from 1940 to 1941. He was a director of the Freeport Sulphur Company, Commercial Solvents Corporation and other companies.

After graduating from Harvard in 1898, Colonel Goodrich volunteered with Theodore Roosevelt's Rough Riders and served in the Spanish-American War, gaining the rank of lieutenant. Although 42, he again enlisted in World War I, training at Plattsburg, New York. He requested overseas service and later served on the General Staff of the A.E.F., with the rank of Colonel. He was one of the founders of the American Legion.

Colonel Goodrich's chief interest was in the company his father, Dr. Benjamin Franklin Goodrich, started in Akron, Ohio, in 1870, the first rubber company west of the Alleghenies. He first became a director of the company in 1913, and chairman of the board in 1927.

Funeral services were held in Mt. Kisco on May 19, with interment at Jamestown, N. Y. Col. Goodrich is survived by his widow, a daughter, and a sister.

Charles E. Baxter

Charles E. Baxter, president of the Baxter Rubber Co., 163 Mulberry St., Newark, N. J., was killed on May 6 by a self-inflicted shot-gun blast at his home in Rumson, N. J. He was 47 years old. Police officials said a note had been left indicating Mr. Baxter was despondent over illness.

George E. Jeandheur, Sr.

George E. Jeandheur, Sr., president of the Elmhurst Rubber Co., Elmhurst, L. I., N. Y., died at his home in Great Neck, L. I., on May 1 of a protracted illness. In his 69th year, Mr. Jeandheur suffered a stroke in 1941, from which he never fully recovered. Born in Brooklyn, New York, Mr. Jeandheur began his career in the rubber business with the New Jersey Car Spring and Rubber Co., one of the oldest mechanical rubber goods manufacturers, founded in 1848. He rose to the position of secretary of that company where he remained until 1920, when he went to Braintree, Mass., to become vice-president of the Mayflower Rubber Co. Later, he became vice-president of the Middlesex Rubber Co., Reading, Mass. In 1925, he joined in the formation of the Elmhurst Rubber Co., Inc., as vice-president, treasurer and general manager. He succeeded to the presidency in 1939 upon the death of Charles H. Traiser. Mr. Jeandheur was a member of the Elks Great Neck Lodge, the Blizzard Men of 1888, and the Chamber of Commerce of the Borough of Queens of New York City. He is survived by his wife, two sons and a daughter.

E. B. Ross

E. B. Ross, associated with the J. C. Adams Co., Ltd., Toronto, Ont., Canada, died on March 28, as the result of an unsuccessful operation. Mr. Ross had been purchasing agent for the Dunlop Tire & Rubber Goods Co. from 1914 until 1932. In 1932 he formed his own company representing various English and American concerns. With the advent of the war in 1940, Mr. Ross terminated his business and joined the Canadian government in production work. At the conclusion of hostilities, Mr. Ross joined the Adams company, where he remained until his death.

George P. Semler

George P. Semler, who retired 20 years ago as crude rubber manager for the Firestone Tire & Rubber Co., died on May 26 at the home of his daughter in Cuyahoga Falls, Ohio. He was 80 years old. Born in Hamilton, Ohio, Mr. Semler operated the Prince Milling Co. there before coming to Akron in 1918. Services were held at the Webb Funeral Home in Hamilton on May 29, with burial in Greenwood Cemetery in Hamilton. His son, daughter and two brothers survive.

Launch New Foam Manufacturer

American Foam Rubber Company has been organized for the manufacture of foam mattresses, pillows, upholstery, etc. The new company has purchased a plant for $140,000 in Burlington, N. J., and plans to begin operations within the next few months. It will employ approximately 250. The Wyman family, which now controls both the Pantasote Co. in Passaic, N. J., and the H. O. Canfield Co. in Bridgeport, Conn., is reported to be involved in the new foam concern.

LABOR NOTES

Firestone announced on May 17 a new pension plan and a new group insurance program for its 13,000 salaried employees in Akron and elsewhere. Expenses of the pension program will be paid by the company, while the insurance program is a contributory plan. The pension plan provides for retirement at age 65 with a minimum of $100 a month, including social security benefits, for employees with 25 years of service.

Employees of the Stalwart Rubber Co. at Bedford, Ohio, voted on May 2 by a 75% majority to retain a so-called open shop, rejecting a bid by the U.R.W.A. The election was supervised by the National Labor Relations Board.

An amicable settlement was reached last month in the action for damages of $250,000 and injunctive relief brought by the Ashland Rubber Products Corp., Ashland, Ohio, against the U.R.W.A. The case, pending for a five-month period, was dismissed upon motion of the company, with the latter bearing costs. The suit followed a wildcat strike at the plant several months ago.

Operations at the plant of the Crown Rubber Co. in Fremont, Ohio, were resumed on May 8 when workers voted 37 to 6 to return to work pending negotiations for a new contract. The plant, idled since March 24, employs about 90. The union is an AFL affiliate.

A program of pensions and social insurance benefits for all production and maintenance employees has been negotiated between the Faultless Rubber Co., of Ashland, Ohio, and the URWA local. The program, reported to be the first of its kind in Ashland, calls for $100 a month including social security benefits at age 65 for workers with 25 years of service, plus proportionate benefits for workers with 15 or more years of service at retirement age.

New Raybestos-Manhattan Officers

George R. Weber was elected treasurer of Raybestos-Manhattan, Inc., at the annual meeting of the Board of Directors recently, succeeding W. H. Dunn, who has retired. W. S. Simpson was elected secretary and W. Ward Kievit a director of the corporation. In addition to his new responsibility, Mr. Weber has been a director and vice-president of Raybestos-Manhattan, Inc., since the formation of the corporation in 1929 and is also general manager of the United States Asbestos Division, Manheim, Pennsylvania. Mr. Simpson, recently appointed assistant general manager of the Raybestos Division, Bridgeport, Connecticut, has been a director of the corporation for two years. Mr. Kievit, who makes his headquarters at the corporation's main office in Passaic, New Jersey, has been secretary since 1946 and comptroller since 1948. With his added duties as a director he has relinquished his duties as secretary.

Paul E. Collette

Paul Edwin Collette, one of the founders and secretary-treasurer of the Oak Rubber Co., Ravenna, Ohio, died at his home in Ravenna on May 16 after a long illness. He was 55 years of age. Born in Akron, Mr. Collette had lived in Ravenna for over 30 years. He was a past president of the Ravenna Chamber of Commerce and of the Kiwanis Club which he helped found. He was a member of the Masons, Elks and Knights of Pythias, a member of the Akron City Club and the Cleveland Advertising Club. He was also a charter member of the Twin Lakes Country Club where he was golf champion five times. Funeral services were held on May 19 with interment in Maple Grove Cemetery. His wife and two sons survive.

Emerson J. Smith

Emerson J. Smith, president and treasurer of the White Rubber Co., and widely known in Ohio banking circles, died at his home in Ravenna, Ohio, on May 14. He was 81 years of age. One of two men who founded the White Rubber Co., Mr. Smith was also president of the Ravenna Savings and Loan Co., and a director of the Second National Bank. Before entering the business world, he was an instructor of mathematics at Hiram College and also had served as Portage County auditor and as a member of the Ravenna City Council. His wife, son and daughter survive.

Percy M. Marshall

Percy M. Marshall, former purchasing agent for the Western Electric Co., died at his home in Rome, Georgia, on May 14. He was 67 years of age. A graduate of the Alabama Polytechnic Institute, Mr. Marshall joined Western Electric in 1905 and was named purchasing agent in 1926, remaining in that post until his retirement in 1948. His wife and two children survive.

American Cyanamid Officials

American Cyanamid Co. has announced the appointment of Dr. Elmore H. Northey as assistant to Dr. Robert C. Swain, vice-president of the company in charge of research and development. Dr. Jack T. Thurston has been named administrative director of the Stamford, Conn., research laboratories, and Dr. Joseph H. Paden director of the Research Division of the Laboratories.

Open New York Office

Bagley & Sewell Co., Watertown, N. Y., have opened offices in New York City at 500 Fifth Avenue. The office will be in charge of Joseph Scheuerman, vice-president of the recently announced Converting Equipment Division of the company for the sale of mill and converting type winders, laminating and other special converting equipment for the rubber, paper and textile industries.

THE STORY BEHIND THE WORD...

RULE-OF-THUMB...

It was the practice of Yorkshire brewmasters to determine the heat of the potion they were brewing by dipping their thumb into the mixture. Although this method was by no means precise, it did enable them to judge the temperature closely enough to assure the proper rate of fermentation. Hence it is from these brewers that we receive the term "rule-of-thumb"—which means a judgement based upon practical experience rather than on scientific knowledge.

A long record of strength, stability and progressive leadership has made the word Muehlstein—the First Name in Scrap Rubber.

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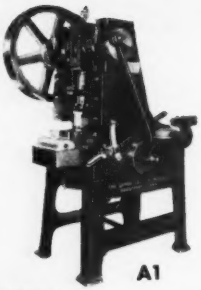
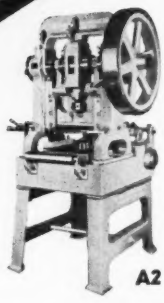
For MORE than Half a Century the name COULTER has meant MORE in higher quality cuttings . . . MORE IN GREATER PRODUCTION. So much MORE that . . .


A1

Men who Know PRODUCTION MACHINES Choose

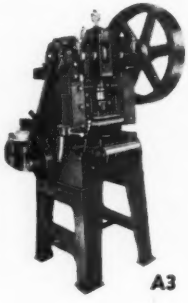
the James COULTER Machine Co.
BRIDGEPORT, CONN.

MODEL A-1
Cutting Heels at high speed production or short runs.


A2

MODEL A-2
Cutting Multiple Heels, Half and Full Soles with stock grain.

MODEL A-3
Cutting Multiple Heels and Taps with or across stock grain.


A3

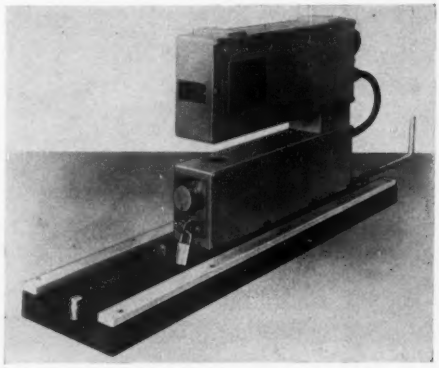
MODEL A-2s
(Not illustrated)
Cutting across grain of stock.

COULTER PRODUCTION MACHINES SINCE 1896

NEW EQUIPMENT

Beta Ray Continuous Gage

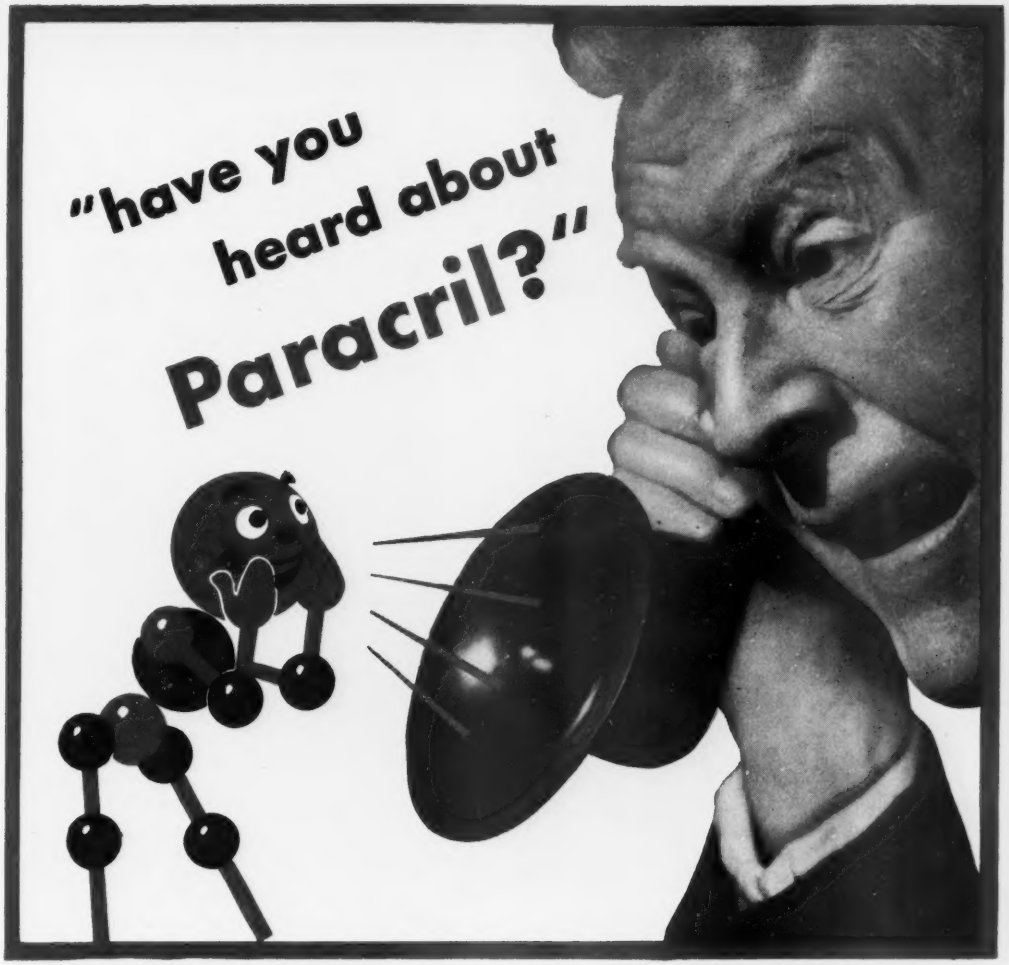
Essentially a weighing device, the Beta Ray Continuous Gage produced by the Pratt & Whitney Division of Niles-Bement-Pond Co., West Hartford 1, Conn., weighs a fixed area of a moving strip by means of radiation. As the gage is non-contacting, it will readily measure the thickness of materials which are wet, sticky,



highly polished, or soft. The gage consists of four units, the gage head, power unit, setter and mounting. The gage head consists of two components. The lower unit contains a small enclosed motor, a generator, a chopper and a small radioactive source. The upper unit contains the ionization chamber, receiver and the preamplifier which are in a hermetically sealed chamber. The power unit, also completely sealed, contains the voltage regulator and electronic amplifier circuits. The setter contains the setting dial, zero control, calibration adjuster, sensitivity control and indicating meter. The gage can be calibrated to read in percent deviation, weight per unit area, or in decimal dimensions.

Ball Bearing Swivel Fittings

Made in single, double or triple swing combinations, Ramsco Ball Bearing Swivel Fittings manufactured by the Rasmussen Manufacturing Co., 12315 Industrial Avenue, Hollydale, Calif., can be adapted to any particular piping situation requiring a flexible steel swing line. The required movement may be occasional or constant, whether it be the elimination of vibration or 360° turning. Swivel fittings for high pressure and for high temperature and corrosive service are available in sizes from ⅜ to 6 inches. Sizes available on low pressure fittings range from ⅜ to 14 inches. The high pressure fittings are geared up to 15,000 psi at 225° F. The low pressure fittings are intended for use up to 1,000 psi at 225° F. High temperature corrosive fittings can be used up to 1,000 psi at 750° F., for steam, hot oil or asphalt, butane-propane or other liquified gases and sulfuric and other acids.



PARACRIL is the name of the buna N-type rubber that Enjay has been marketing for several years. Its inherent resistance to oil, air, water, heat, cold, and time is well known.

Versatile Paracril is ideal for flexible parts subject to heavy abrasive wear, extremes of hot and cold, and the destructive action of oils and fats. Combined with vinyl resins, Paracril imparts all-weather serviceability to hose covers.

You will find other advantages to using PARACRIL—quick and economical delivery from conveniently located warehouses, quality and uniformity of product, and cheerful technical cooperation.

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A FEW INDUSTRIES NOW USING PARACRIL: Petroleum • Railroad • Textile • Automotive • Aircraft • Household Appliances • Printing.

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Additives, Alcohols, Esters, Ketones, Rubbers and Plastics

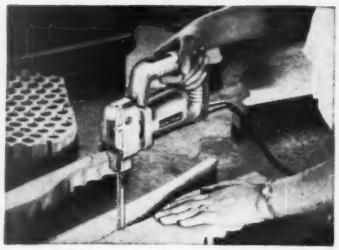
ENJAY

PARACRIL®

The special rubber that resists oil, air, water, heat, cold and time.

New STANLEY No. 99 SPONGE OR FOAM RUBBER CUTTER

. . . cuts up to 4" thick at speeds up to 30 ft. a minute!



A brand new electric tool designed by Stanley that puts cutting of sponge and foam type rubber on a production basis. Saves time and material.

Follows any line or templet, inside or outside—straight cuts, curves and angles — with hairline precision. No concave edges, no torn or ragged work.

Light weight (only 4 lbs.). The duplex handle permits easy handling on all operations. Girl operators like it.

No. 99 Sponge Rubber Cutter operates on either A.C. or D.C. Blades are made of alloy steel for long life and are easily replaceable.

Save material, save time with the new Stanley Sponge Rubber Cutter No. 99. Ask your supply house, or write for folder. Stanley Electric Tools, 562 Myrtle St., New Britain, Conn.

STANLEY

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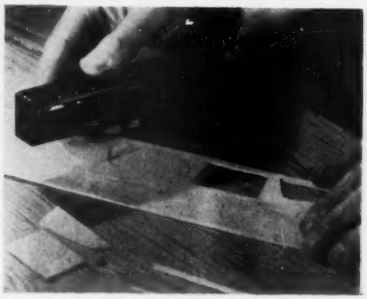
HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

Zimmerman Gasket Cutter

Disks, gaskets and other similar cuttings down to ¼-inch in diameter, straight strips of any length, and curves of any shape are easy to cut in pliable sheet materials with a versatile new gasket cutting instrument produced by the Zimmerman Packing Co., 2768 Highland Ave., Cincinnati 12, Ohio. Made of Bakelite, a



razor-sharp blade protrudes at one end. To make a circular cut, the plastic slide block is set to the desired diameter, and the pivot post knob tightened to hold the block in place. The slide block is then set over a center pin stuck into the materials and the pivot knob turned clockwise to complete the operation. For cutting irregular shapes, the straight-edged blade is replaced with a curved blade set so the tip emerges just below a guide line on the side of the cutter.

Challenger Knife Grinder

A recent development in knife grinders eliminating the need for lubricating is provided in the Challenger Precision Knife Grinder developed by the Benedict Manufacturing Co., Big Rapids, Mich. The unit features machined ways on which the grinding head travels

on 8 dust-proof steel balls. The knife can travel the full length of the knife bar without overhanging the bed. This construction makes lubrication unnecessary. Consequently, the accumulation of abrasives on the ways is lessened. The grinder is regularly equipped with a cast iron knife bar and four "C" clamps that hold a blade down to ½-inch wide. A magnetic bar is also available. The unit is furnished with or without coolant and tank.

Fortuna Band Knife Splitter

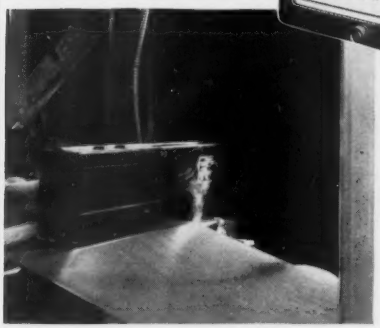
With a 12-inch wide splitting surface, the band knife splitter manufactured by the Fortuna Machine Co., 153 Waverly Place, New York, N. Y., was designed from both a labor and space saving point of view. Intended for the splitting or leveling of leathers, rubber, cork,

etc., the unit is 43 inches long, 30 inches wide and 51 inches high. The knife is completely encased and there is a blower to remove scrap. There is one knob adjustment for raising and lowering the presser bar; one knob to adjust the emery wheel; and one knob advances or retards the knife. The working table itself is 36 inches high.

..resists abrasion, cut and tear...

SEE PAGE 260

WEIGHS SHEET STOCK WITHOUT CONTACT



The Verigraph Weight Recorder applies the speed and accuracy of electronics to weight recording. Simple to install and operate. This exclusive Foxboro development has been in use by leading companies on critical calendering since 1926.

Moving sheet is electronically weighed by passing between 2 capacitor plates.

You get a continuous, accurate record of the weight of calendered stock, when your calenders are equipped with the Foxboro Verigraph.*

Regardless of temperature, speed, roughness, or other normal conditions of the material, the Verigraph gives you a precise weight measurement *without contacting* the sheet! The sheet moves between precisely spaced capacitor plates, and the exclusive electronic measuring circuit makes readable records of thickness variations as small as .0001". Such accuracy reduces rejects, improves uniformity, and can save many tons of material annually.

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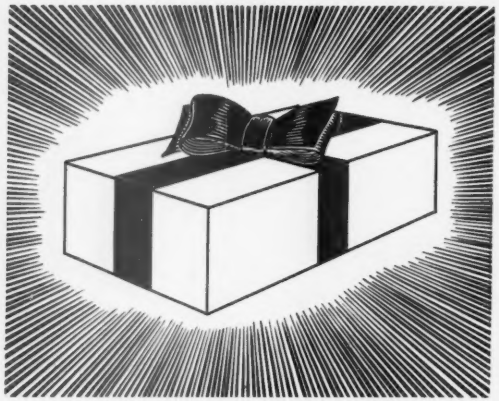

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Stanley coatings and finishes can move your products faster, because our chemists work with your engineers to create just the right finish for your specific product application.

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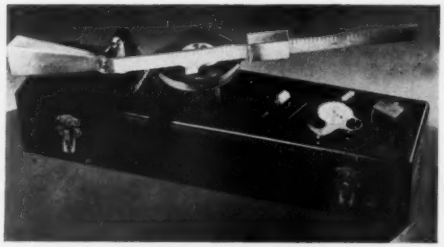
Taber Shear Hardness Tester

Devised to measure the surface toughness and scratch resistance of a plastic or coated surface, the Model 139 Shear Hardness and Diamond Scratch Tester manufactured by the Taber Instrument Co., 111-RA Goundry St., North Tonawanda, N. Y., is equipped to provide an



adjustment in load from 0 to 500 grams. Tests are performed with a finely balanced scale beam, calibrated in grams, to which is attached the Taber S-20 or S-30 precision ground contour shear tool or the 139-55 diamond point scratch tool. An extra calibrated weight is also furnished for attachment to the end of the scale beam to increase its load capacity to a total of 1000 grams. The scale beam is pivoted on precision ball bearings, the internal bore of which is a slide fit over the shaft projecting from the mounting. The gauge block to which this shaft is fastened can be raised or lowered to correspond with the specimen thickness, thus maintaining the scale beam in level position whether the specimen is a thin plate or ¼-inch in thickness. Provided with the instrument is a walnut finished instrument case which holds the scale beam, weights, dial micrometer, tools and other parts.

Yale & Towne Manufacturing Co., Philadelphia 15, Penna., has developed a new **air-operated device for filling drums** to the correct weight. All that is required to operate the Yale Load King Scale, on which the unit is mounted, is an air line, pressure between 80 and 150 pounds, preferably 100 pounds. The flow of material can be regulated to suit the material and the operation.

The Ohaus Scale Corp., Newark, N. J., has announced the availability of its new **analytical balance scoop and counterweight.** Because both the scoop and the counterweight are made of aluminum, the balance remains constant, unaffected by air density changes, which often introduce large buoyancy errors. The sets are precisely balanced for use in the finest analytical work.

Reco, 37 N. Wacker Dr., Chicago 6, Ill., has developed the **Form-A-Heater,** a unit designed to give more uniform radiation of heat to all sides and bottom of flasks than previously obtained with other laboratory heaters.

The **Cono Model "EB" Pneumatic Current Controller** manufactured by the Conoflow Corp., 2100 Arch St., Philadelphia 3, Penna., has been developed to permit the use of standard industrial pneumatic controllers on applications involving electrical components in the final controlled element. The unit is also commonly used for controlling the input to electronic speed control devices.

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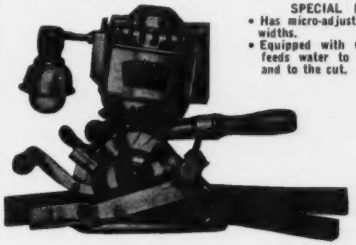
REG. TRADE MARK

RUBBER STRIP CUTTER
PATENTED

A PORTABLE machine capable of stripping slab rubber up to 1″ thick at the rate of 20,000 feet in 8 hours. Any width desired.



SPECIAL FEATURES
- Has micro-adjustment for accurate widths.
- Equipped with water tank which feeds water to the slotted knife and to the cut.
- Has repulsion induction motor which carries any overloads.
- Automatic sharpener device keeps knife keen and sharp.
- Has base with rollers and is very easy to handle.

Cuts within 1/64 inch to 1/100 inch tolerance depending on grades of rubber. Cuts a slab down to the last shaving. Cuts all grades of rubber including pure gum, sponge, etc. Cuts squarely—no rejects.

Now in use by many leading Rubber Manufacturers & Jobbers

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SIZE? THICKNESS? COMPRESSIBILITY?

BENCH-TYPE, MODEL 57-B1
Graduated .001″, range 1.000″, Throat depth 2 1/16″.

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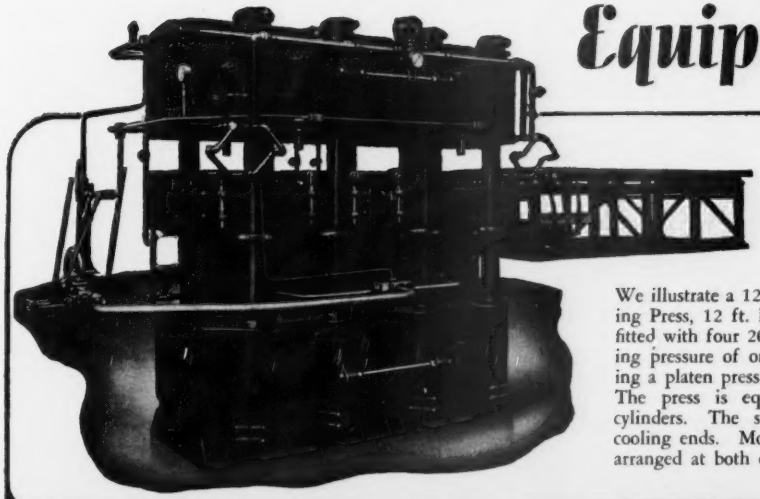
Hydraulic Vulcanizing Equipment



We illustrate a 1250 ton single daylight Sheeting Press, 12 ft. long by 3 ft. 6 inches wide, fitted with four 20″ rams, suitable for a working pressure of one ton per square inch, giving a platen pressure of 450 lbs. per sq. inch. The press is equipped with four opening cylinders. The steel steam chests have 9″ cooling ends. Motor driven drawtable can be arranged at both ends of the press if desired.

FRANCIS SHAW & CO. LTD. MANCHESTER 11 ENGLAND

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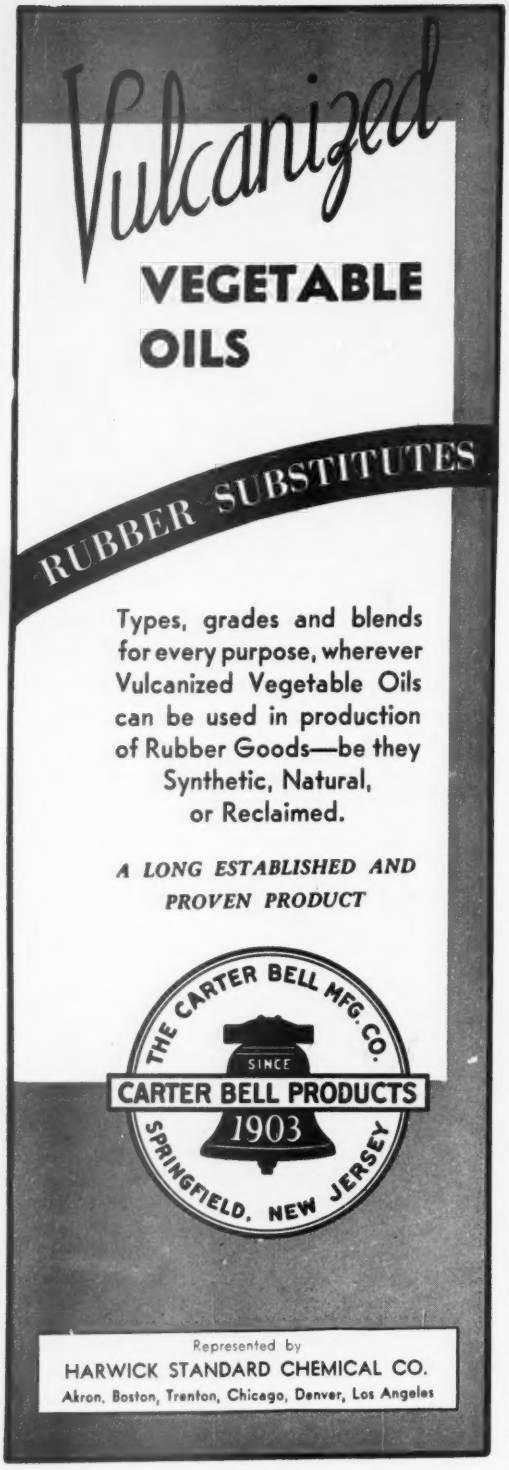
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Types, grades and blends for every purpose, wherever Vulcanized Vegetable Oils can be used in production of Rubber Goods—be they Synthetic, Natural, or Reclaimed.
A LONG ESTABLISHED AND PROVEN PRODUCT
THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY
Represented by
HARWICK STANDARD CHEMICAL CO.
Akron, Boston, Trenton, Chicago, Denver, Los Angeles

REVIEWS

BOOKS

Manual on Fatigue Testing. (Special Technical Publication No. 91). American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Penna. 6 x 9 in. 82 pp. $2.50.

This new manual culminates several years of work by ASTM Committee E-9 on Fatigue Testing. The purpose of the manual is to supply information to those setting up new laboratory facilities, to aid in operating the equipment properly, and to offer advice on presentation and interpretation of data. The manual contains eight sections including the introduction (Section I). Section II on Symbols and Nomenclature for Fatigue Testing defines all terms, and their coresponding symbols, that are likely to be found in fatigue testing. The symbols are those recommended by the American Standards Association.

Section III on Fatigue Testing Machines classifies them as to type of load, type of stress, design characteristics, and operating characteristics. More than 30 illustrations aid in showing the differences in the various types of fatigue testing machines. This section contains a bibliography of more than 120 references. Specimens and Their Preparation are described in Section IV which presents information on various types of specimens, both metallic and non-metallic, with detailed instructions for polishing.

Section V on Test Procedure and Technique discusses such things as planning tests, selection of fatigue machines, selection of samples and preparation, and measuring specimens. A special bibliography has 44 references. Section VI on Presentation of Fatigue Data and Section VII on Interpretation of Fatigue Data describe general considerations in presentation and interpretation of data obtained from three different types of tests designated as material type, structural type, and actual-service type. An extensive bibliography (Section VII), which contains more than 50 references, completes the publication.

•

Chemical Engineers' Handbook (Revised Third Edition). Edited by John H. Perry. Published by McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 18, N.Y. 7¼ x 10 in. 1942 pp. $15.00.

(Available from Book Department, RUBBER AGE)

An authoritative group of more than 140 recognized specialists have contributed detailed explanations of new developments in every branch of industry to bring the latest edition of this standard chemical engineering reference work completely up to date. Full coverage of essential processes, equipment, materials, etc., is provided in some 30 complete sections. Several entirely new sections are incorporated, providing important information pertaining to furnaces and kilns, size enlargement, general theory of diffusional operations, etc. More than 2,000 charts, diagrams, cross-sections, flow sheets, etc., are included, all drawings having been newly prepared and increased in size for greater clarity. All subject matter is arranged in two columns for greater legibility and an extensive index makes use of more common words and includes their synonyms and equivalents.

•

Statex: A Columbian Colloid. Research Laboratories, Columbian Carbon Co., 41 East 42nd St., New York 17, N. Y. 8½ x 11 in. 30 pp.

Through the application of Statex K to the reinforcement of cold rubber, new facts have been discovered and new theories of rubber reinforcement have been developed. These are outlined in this bulletin. The bulletin also presents a compilation of data first presented in RUBBER AGE and other technical publications relating to the work at hand. Physical properties and factory processing data are also presented. Photomicrographs, charts and graphs are offered as is a complete bibliography.

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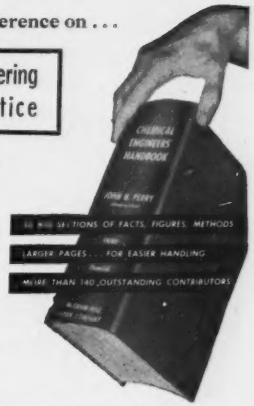
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REVIEWS (CONT'D)

Abstracts of Patents Relating to Rubber Latex. Vol. II. By T. R. Dawson and R. W. Parris. Published by the British Rubber Development Board, Market Buildings, Mark Lane, London, E.C. 3, England. 5½ x 8½ in., 86 pp.

The fourth edition of "Rubber Latex," by H. P. Stevens and W. H. Stevens, published in 1936, contained a collection of 925 abstracts of British patents relating to latex, ending with British Patent No. 438,795. That collection of patents was supplemented by a further series of 1,052 abstracts, entitled "Abstracts of Patents Relating to Rubber Latex," published in 1941 and covering British Patent Nos. 438,796 to 520,735. The present booklet is a further supplement of 427 abstracts carrying the series through British Patent No. 603,628, or the period from 1940 through 1948. Like the previous edition, the current one is limited to patents relating to Hevea rubber latex and to artificial aqueous dispersions of Hevea rubber or reclaimed Hevea rubber. Name and subject indexes are included.

BOOKLETS, CATALOGS, etc.

Purecal in Natural Rubber. (Bulletin No. R-1). Wyandotte Chemicals Corp., Wyandotte, Mich. 8½ x 11 in. 40 pp.

This is the first technical report issued on Purecal, the name given to the family of precipitated calcium carbonates currently being marketed by Wyandotte Chemicals. In the fore part of the booklet, the nomenclature of the Purecals is outlined and the physical and chemical properties of the three types available are indicated. The balance of the booklet is devoted to recommended applications of the various Purecals in numerous types of rubber products, including inner tubes, hospital sheetings, wire jackets, soling, hose covers, passenger tires, etc. In each instance original and aged properties of the stocks are shown, with brief summaries presented. The effect of Purecal in various stocks as compared with other materials, such as general carbonates, ultra-fine carbonates, clays, and miscellaneous fillers, is shown in a series of black and white graphs. Suggestions for preparing Purecal masterbatches are included.

•

Tergitol Surface-Active Agents. (F-5900). Carbide and Carbon Chemicals Division of the Union Carbide and Carbon Corp., 30 East 42nd St., New York 17, N. Y. 8¼ x 11 in. 8 pp.

Properties, uses and specifications of Tergitol wetting agents 7 and P-28 and of Tergitol penetrants 4, 08, and EH are presented in this booklet. Data on average wetting times for the different products in various acid, base, and salt solutions are presented, along with information on the effects of organic solvents on wetting time. A useful table for the selection of the most efficient Tergitol surface-active agent for any given application is featured. A technical data sheet on the new Tergitol dispersant TMN-650 is also offered by the company. The data sheet (F-7387) describes the use of the product especially for any operation in which the problem of insoluble metal-soap formation exists.

•

Natural Rubber and You. Natural Rubber Bureau, 1631 K Street, N.W., Washington 6, D. C. 6 x 9 in. 64 pp.

The story of natural rubber, past and present, is contained in this new booklet. Charts and tables throughout the book show world production figures from 1939 through 1949; natural rubber prices from 1910 through 1949, and world consumption figures from 1939 to the present. A major section of the booklet is devoted to a pictorial description of how natural rubber is grown and prepared for shipment in the Southeast Asiatic countries. Photographs depict life on a typical Malay rubber farm as well as the operations on a larger European-owned rubber farm. Other photographs illustrate the work of the Rubber Research Institute of Malaya, which assists all growers in the development of higher-yielding, better quality rubber plantings.

L'Institut Francais du Caoutchouc et L'Institut des Recherches sur le Caoutchouc en Indochine. (The French Rubber Institute and the Rubber Research Institute in Indo-China). French Rubber Institute, 42 Rue Scheffer, Paris 16-e, France. 8½ x 10¾ in. 40 pp.

The history of both the French Rubber Institute, which was organized in 1936 in the laboratories of the French College of Organic Chemistry and moved into its own building in Paris in 1939, and the Rubber Research Institute in Indo-China, which was organized in 1940, is given in this booklet. The aims, objectives and achievements to date of both organizations, which are closely inter-related, are discussed and the testing equipment in both laboratories is illustrated in large, full-page reproductions. A complete list of the publications issued by the research groups, numbering over 100, is given. An outline map showing the method of administration pertaining to both organizations is appended to the booklet, indicating how their work is tied in with the Rubber Study Group, the International Rubber Development Committee, and other groups.

•

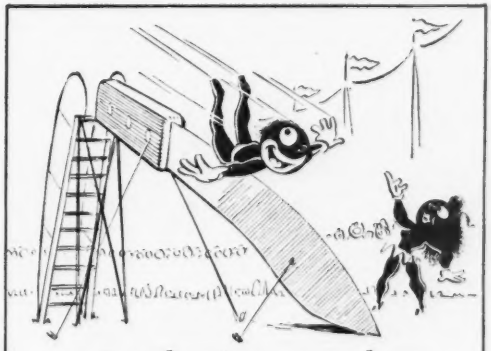
Application of Cinchona Alkaloids in the Rubber Industry. (Communication No. 56). By R. F. A. Altman and G. J. van der Bie. Netherlands-Indies Rubber Research Institute, Buitenzorg, Java, N.E.I. 6¼ x 9½ in. 24 pp. In English.

One of the most important problems in cinchona research has been and still is to find practical and economical uses for the by-products of quinine production, i.e., the non-quinine alkaloids of cinchona bark. In this investigation, these alkaloids, specially prepared for the purpose, were tested as vulcanization accelerators and antioxidants for rubber. Preparation of the alkaloids and method of procedure are outlined in the report, with the results summarized in tables and graphs. According to the report, some of the compounds appear to be equal in activity to some of the widely used commercial accelerators and antioxidants.

•

A Study in Black. Godfrey L. Cabot, Inc., 77 Franklin St., Boston 10, Mass. 8½ x 11 in. 16 pp.

This handsome booklet has been prepared from material presented in "A Study in Black," the sound film in full color produced by Caravel Films, Inc., for Godfrey L. Cabot, Inc. The booklet, like the film, describes the manner in which the different forms of carbon black are made. It also discusses the raw materials from which black is made, as well as processes, markets and uses. Product and process development are also discussed. The booklet is illustrated with many different colored photographs.



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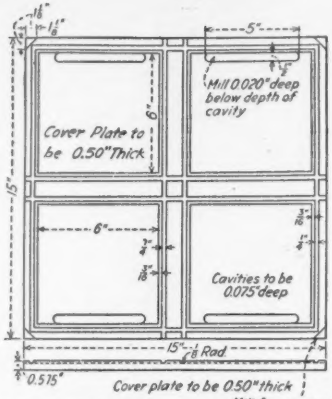

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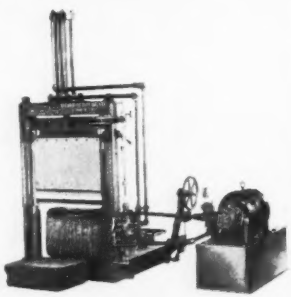

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REVIEWS (CONT'D)

Resorcinol. (Technical Bulletin No. C-9-124). Chemical Division, Koppers Co., Inc., Pittsburgh 19, Penna. 8¾ x 11½ in. 40 pp.

An extensive revision and enlargement of a previous technical bulletin, this bulletin describes the use of resorcinol to increase the adhesion between rubber and textiles and in the preparation of dyestuffs, explosives and pharmaceuticals. The chemical's use in the preparation of cosmetics, fur dyes and treatments, paints and varnishes, plastics stabilizers and plasticizers, synthetic resin adhesives, tanning agents, thermosetting plastics, and as an analytical agent or as an antioxidant is also discussed. Technical information in the bulletin includes physical properties, crystallographic, spectral, and thermodynamic data, as well as data on the chemical's solubility in common liquids.

•

Industrial Control Devices. (Catalog No. 8303). Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Philadelphia 44, Penna. 8 x 10½ in. 64 pp.

This catalog presents over 100 different models of non-indicating electric, electronic, and pneumatic controllers that find use in many industrial applications. A number of important additions to the previous line are shown, including electronic temperature controllers and pneumatic insertion type temperature controllers; magnetic starters and contactors; heavy-duty pneumatic positioning motors, and pneumatic automatic reset relays and electric stop controllers.

•

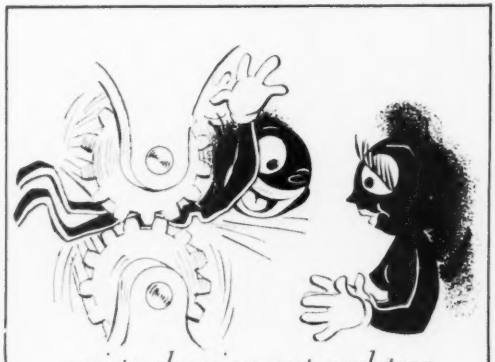
Low-Speed Synchronous Motors. (GEA-5332). Apparatus Department, General Electric Co., Schenectady, N. Y. 8½ x 11 in. 8 pp.

Design features and characteristics of the synchronous motors produced by General Electric are outlined in this bulletin. Subjects and details discussed include rotor and stator construction, windings, brushes and brush rigging, shields and terminals. Performance data is also furnished as is information on accessory equipment. The bulletin is illustrated with many different photographs.

•

B. F. Goodrich in Action. B. F. Goodrich Co., Akron, Ohio. 8½ x 11 in. 24 pp.

Designed for the layman, this colorful and interesting booklet shows some of the multitudinous products manufactured by the company for home, farm, industry and office, as well as in the aeronautical, surgical, flooring and clothing lines. Many of the items in the aforementioned categories are illustrated and described.



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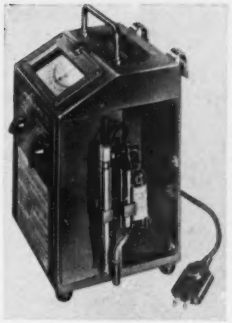

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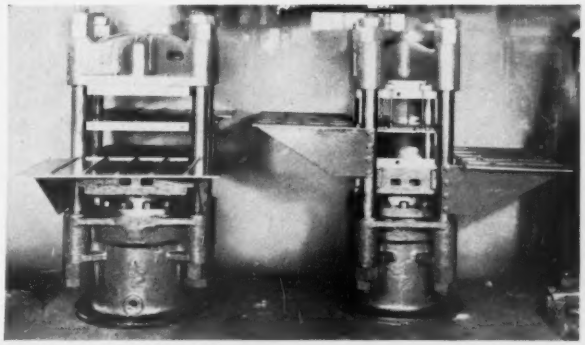

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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, JUNE 7, 1950

Natural Rubber

Soaring prices have marked activity in the natural rubber market with the price of spot rubber reaching 34 cents on June 1, 8 cents above the low of the period, 26 cents, which was quoted on May 5. The average price of spot rubber for the month of May was 28.07 cents for 22 trading days. This compares with an average of 23.51 cents in the preceding month.

With rubber futures fluctuating widely, the board of governors of the New York Commodity Exchange raised original margins on rubber futures contracts beginning June 1. Prices, at that time, had reached a 22-year peak. The margin on non-hedge transactions has been raised from $600 to $900 per contract; for hedge transactions, the margin has been raised from $500 to $750 per contract, and on straddle transactions the margins have been advanced from $200 to $250 per contract.

Manufacturers have been buying rubber actively in recent weeks. It has been the combination of this demand which reflected the low inventories on hand that has influenced the upsurge and has tended to overshadow the fact that a time is approaching when supplies from producing areas may become a little more plentiful.

Few in the rubber trade look for a drastic decline in prices in the immediate future. It is the impression that there may be another upsurge, but that the highs have been witnessed and that gradually the market will edge off to a more reasonable level.

Today's quotations on the outside market, London and Singapore, follow:

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.33½
June	.33½
July	.33⅛
Thin Latex Crepe:	
Spot	.34½
June	.34½
Thin Brown Crepe, No. 2	.29½
Ambers, No. 3	.29⅛
Flat Bark Crepe	.26½

London Market

(Standard Smoked Sheets)

July	31.94 - 32.23
September	30.92 - 31.21

Singapore Market

(Standard Smoked Sheets)

July	31.06 - 31.14

Synthetic Rubber

(Dry Types-Per Pound)

Butaprene NF	.440 - .450
Butaprene NL	.450 - .460
Butaprene NAA	.490 - .500
Butaprene NXM	.520 - .530
Chemigum 30 N4NS	.400 - .470
Chemigum 50N4NS	.400 - .470
Chemigum N3	.450 - .520
GR-I	—— - .185
GR-S	—— - .185
Hycar OR-25	.450 - .460
Hycar OR-15	.520 - .530
Hycar OS-10	.500 - .510
Neoprene Types CG and AC	—— - .500
Neoprene Type E	—— - .650
Neoprene Types FR and KNR	—— - .750
Neoprene Type GN	—— - .320
Neoprene Type GN-A	—— - .320
Neoprene Type RT	—— - .350
Neoprene Type S	—— - .320
Neoprene Type W	—— - .350
Paracril 18	.430 - .450
Paracril 26	.440 - .460
Paracril 35	.510 - .530
Silastic (compounded)	2.35 - 4.40
Thiokol Type A	.370 - .470
Thiokol Type FA	.520 - .620
Thiokol PR-1	.750 - .850
Thiokol Type ST	.750 - .850

Scrap Rubber

The improvement in scrap rubber activities noted during the past few weeks has continued on a moderate level. The strengthening market is attributed to the increased demand for reclaim due to the high price of natural rubber plus the shortage of GR-S. Export demand has also improved somewhat. Recent attempts at securing reductions in freight rates are being watched with interest by the industry. Prices remain at approximately the same levels. Current quotations follow:

Mixed passenger tires	ton	$13.00
Beadless truck tires	ton	nom.
Mixed truck tires	ton	15.00
Beadless passenger tires	ton	nom.
No. 1 passenger peelings	ton	42.50
No. 1 truck peelings	ton	42.50
Red passenger tubes	lb.	.07
Black passenger tubes	lb.	.03½
Mixed passenger tubes	lb.	.04
No. 2 truck tubes	lb.	nom.
Red truck tubes	lb.	.07
Black truck tubes	lb.	.03¾
Buffings	ton	15.00

Reclaimed Rubber

Consumption of reclaim for the month of April is estimated at 21,463 tons by the Department of Commerce, compared with the 22,151 tons consumed in the previous month. Production and consumption of reclaim remain at satisfactory levels. Improved demand has been attributed to the shortage of GR-S and the high price of natural rubber. The price structure for reclaim remains at substantially the same level it has maintained during the past few months. Current quotations follow:

Tires

Black, Digester (Natural)	lb.	.08¼ - .08¾
Peels No. 1	lb.	.08¼ - .08¾
Whole Tire (Blend)	lb.	.08¼ - .08¾

Inner Tubes

Black (Natural)	lb.	.11½ - .12
Red (Natural)	lb.	.13½ - .14½
Butyl	lb.	.08¼ - .08¾

Shoe

Unwashed (Natural)	lb.	.08¼ - .09¼

Cotton Tire Fabrics

An inadequate supply of synthetic fibers continues to increase demand for cotton tire fabrics. The increased production of tires has also acted to strengthen the market. Whether the expanding market will continue is problematical, inasmuch as the production of synthetic fibers is slated to increase within the next few months. Prices for tire fabrics have not changed during this past period and are expected to hold in the foreseeable future.

Standard, Peeler, 12/4/2	lb.	.68
Standard, Peeler, 14/4/2	lb.	.70
Standard, Peeler, 16/4/3	lb.	.7250
Extra Staple, Peeler, 12/4/2	lb.	.8315
Extra Staple, Peeler, 14/4/2	lb.	.8575
Extra Staple, Peeler, 16/4/3	lb.	.8825

Chafers

14.4 oz. (per sq. yard)	lb.	.67
9.25 oz. (per sq. yard)	lb.	.63
11.65 oz. (per sq. yard)	lb.	.60
8.9 oz. (per sq. yard)	lb.	.6475

Cotton

The price of middling uplands on the Cotton Exchange has moved in a range of 1.26 cents since our last report (May 4), high for the period being 34.49 cents reached on June 7, and low being 33.23 cents reached on May 9. The average price of middling uplands for May was 33.64 cents based on 25 trading days. This compares with an average of 33.23 cents for April.

According to the Department of Agriculture, 1949-50 world supply of cotton totals about 46,000,000 bales. This figure was arrived at by the International Cotton Advisory Committee and is nearly 3,500,000 larger than 1948-49, but slightly smaller than global supply in the years immediately preceding World War II. World production in 1949-50 was the largest since the 1937-38 season.

Global consumption this season is expected to be 28,900,000 bales, 100,000 larger than last season but slightly below prewar average. The world carry-over on August 1, 1950, will be approximately 17,000,000 bales compared with 14,800,000 bales the previous year. The Committee's outlook for 1950-51 is for a reduction in world cotton production of from 2,000,000 to 3,000,000 bales and for continuance of world consumption at current levels.

Marshall plan goods seized by Chinese Communists in Shanghai recently consisted chiefly of 22,387 bales of raw cotton valued at $4,000,000 by ECA. The raw cotton was all that remained unprocessed out of 330,661 bales supplied to China by ECA prior to the Communist victory in May, 1949.

Quotations for middling uplands on the Exchange follow:

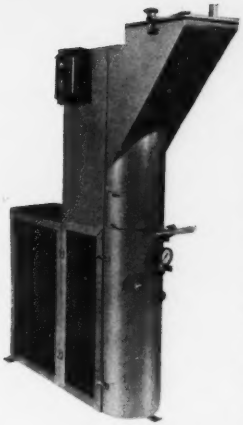
	May 4	June 7		
	Close	High	Low	Close
July	32.58	33.65	33.49	33.49
Oct.	31.13	33.24	33.00	33.03
Dec.	30.94	33.10	32.88	32.95

Closing Rubber Prices on New York Commodity Exchange

(No. 1 R.S.S. Contract)

FROM MAY 5 TO JUNE 7

	Spot	June	July	Sept.	Dec.	Sales
May 5	26.00	26.30	25.60	23.45	22.36	117
6	——	——	——	——	——	——
7	——	——	——	——	——	——
8	26.25	27.50	26.90	24.73	23.46	312
9	28.00	27.45	26.50	24.40	23.20	178
10	27.75	27.70	27.00	24.70	23.16	128
11	28.00	27.70	27.50	25.20	23.30	127
12	28.50	27.70	27.00	24.90	23.30	132
13	——	——	——	——	——	——
14	——	——	——	——	——	——
15	27.75	26.70	26.29	24.35	22.50	134
16	27.50	27.05	26.55	24.35	22.70	59
17	27.62	28.05	27.75	25.70	23.80	183
18	28.88	28.45	28.15	25.90	23.90	195
19	29.00	28.50	28.35	26.10	23.90	152
20	——	——	——	——	——	——
21	——	——	——	——	——	——
22	29.12	28.50	28.35	26.10	23.90	150
23	29.00	28.95	28.50	26.30	24.25	153
24	29.25	28.85	28.75	27.00	25.10	238
25	29.50	29.25	29.25	27.55	25.85	243
26	29.88	30.40	30.40	28.65	26.80	147
27	——	——	——	——	——	——
28	——	——	——	——	——	——
29	31.00	31.35	29.50	27.65	26.10	104
30	——	——	——	——	——	——
31	31.75	33.20	31.30	29.65	28.10	357
June 1	34.00	33.25	32.10	29.90	28.35	275
2	32.25	31.15	31.00	29.15	27.20	289
3	——	——	——	——	——	——
4	——	——	——	——	——	——
5	31.75	32.65	32.50	30.35	28.80	169
6	33.25	33.40	33.25	31.25	29.65	257
7	33.75	33.15	33.00	31.10	29.45	201



Campbell Model 1404-B Soapstoner

Want A *Better* Soapstoner?

Is there a "bottleneck" in your dusting operation on extruded rubber goods or plastics?

Get a Campbell Soapstoner. It has many advantages over ordinary Dusters. It makes its own air. There's no need to hook to moisture-laden factory air lines. Locate it anywhere. Another feature is the finger-tip precision control of the volume of material the machine ejects.

Air-tight, dust-proof and compact, this modern Soapstoner is now used by major companies. Write today for a quotation.

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Established 1917

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Meticulous workmanship has been a tradition at Brockton Cutting Die for three generations. That's why rubber manufacturers turn to us for quality dies of all kinds . . . for dies that really retain their cutting edge. Our experience and facilities enable us to turn out a cutting die for every type of service.

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BROCKTON CUTTING DIE & MACHINE CO. INC.
CUTTING AND PERFORATING DIES

AVON, MASS.

Designed To Extrude RUBBER or PLASTICS

IN these days of rapidly changing developments owners of Royle extruding machines are in the advantageous position of being able to adapt their extruders to either rubber or plastics production. If you are faced with the problem of extruding rubber and plastics the versatility of ROYLE extruders is of paramount importance to you. Whether you require a light or heavy production extruder features have been incorporated to assure maximum results. The change-over is quickly and simply accomplished.

Send for your copy of Bulletin No. 448. It describes these features and how they may be applied to older type extruders.

ROYLE # 2 Extruding Machine. Non-extended cylinder, plain tubing head.

JOHN ROYLE & SONS

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PATERSON 3, NEW JERSEY

CURRENT MARKET PRICES

Of Rubber Chemicals and Compounding Ingredients

JUNE 7, 1950

Prices are, in general, f.o.b. works. Range of prices indicates grade or quantity variations.

Abbreviations: bbls., barrels; c.l., carlot; cyl., cylinder; dlvd., delivered; dms., drums; l.c.l., less than carlot; M.B., masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

ª East of Mississippi.

*For Export Only

—The arrangement of this section follows closely the Chemical Section of the 1949 RUBBER RED BOOK to which readers are referred to determine the classification of any material or brand name. —Although suppliers of every material were contacted for price information, only those materials are listed for which quotations have been furnished us. The quotations are not guaranteed and prospective purchasers should contact suppliers for confirmation before placing orders. Suppliers are requested to send us regularly current prices on all of their materials used in the rubber industry.

ACCELERATORS

A-1 (Thiocarbanilide)	lb.	.40	.47
A-32	lb.	.59	.69
A-77	lb.	.42	.55
A-100	lb.	.42	.55
Accelerator No. 8	lb.	—	.90
Accelerator—49	lb.	.44	.45
Accelerator—89	lb.	—	1.20
Accelerator—122	lb.	—	1.30
Accelerator—552	lb.	—	1.80
Accelerator—808	lb.	.59	.61
Accelerator—833	lb.	1.13	1.15
Acro AC-165	lb.	.37	.39
Altax	lb.	.35	.37
Ancap*	lb.	.27	.29
Ancatax*	lb.	.35	.37
Ancazide* ET	lb.	—	1.00
ME	lb.	—	1.10
Ancazate* BU (ET & ME)	lb.	—	1.00
Arazate	lb.	—	2.16
Beutene	lb.	.59	.61
Bismate	lb.	—	3.00
B-J.F	lb.	.27	.29
Butasan	lb.	—	1.00
Butazate	lb.	—	1.00
Butyl Eight	lb.	1.00	1.25
Captax	lb.	.27	.29
C-P-B	lb.	—	1.95
Cumate	lb.	—	1.45
Dibenzo G-M-F	lb.	—	2.50
Diorthotolyguanidine	lb.	.48	.50
Diphenylguanidine	lb.	.39	.45
El-Sixty	lb.	.41	.48
Ethasan	lb.	—	1.00
Ethazate	lb.	—	1.00
Ethyl Thiurad	lb.	—	1.00
Ethyl Tuex	lb.	—	1.00
Ethylac	lb.	.88	.90
G-M-F	lb.	—	2.50
Good-rite Erie	lb.	.32	.34
Guantal	lb.	.47	.54
Harvex	lb.	.52	.57
Hepteen	lb.	.42	.44
Base	lb.	1.80	1.85
Ledate	lb.	—	1.00
Mercaptobenzothiazole	lb.	.29	.32
Mercaptobenzothiazyl Disulfide	lb.	.37	.40
Mertax	lb.	.40	.47
Methasan	lb.	—	1.00
Methazate	lb.	—	1.00
Monex	lb.	—	1.10
Mono Thiurad	lb.	—	1.10
Morfex	lb.	.56	.58
2-MT	lb.	—	.62
NA-22 (for neoprene)	lb.	—	1.50
Novac	lb.	—	1.40
A-13	lb.	.65	.67
O-X-A-F	lb.	.39	.41
Pentex	lb.	—	1.00
Flour	lb.	—	.20
Permalux (for neoprene)	lb.	—	1.85
Phenex	lb.	.40	.45
Pipazate	lb.	—	1.53
Pip-Pip	lb.	—	1.80
R-2 Crystals	lb.	—	1.75
Rotax	lb.	.39	.41
RZ-50	lb.	—	1.00
SA 52	lb.	—	1.10
SA 57	lb.	—	1.00
SA 62	lb.	—	1.00
SA 66	lb.	—	1.45
SA 67	lb.	—	1.00
SA 77	lb.	—	1.00
Safex	lb.	—	1.15
Santocure	lb.	.58	.65
Selazate	lb.	—	1.45
Selenac (Ethyl, Methyl)	lb.	—	1.45
Setsit-5	lb.	.75	1.00
SPDX-GH (tons)	lb.	.64	.69
GL	lb.	—	.95
Tellurac	lb.	—	1.45
Tepidone	lb.	—	.55
Tetrone	lb.	—	1.25
A	lb.	—	1.85
Thiofide	lb.	.38	.45
Thionex	lb.	—	1.10
Thiotax	lb.	.30	.37
Thiurad	lb.	—	1.10
Thiuram E	lb.	—	1.00
M	lb.	—	1.10
Trimene	lb.	.54	.56
Base	lb.	1.03	1.06
Tuads, Ethyl	lb.	—	1.00
Tuads, Methyl	lb.	—	1.10
Tuex	lb.	—	1.10
Ultex	lb.	1.00	1.05
Unads	lb.	—	1.10
Ureka C	lb.	.63	.70
Ureka C	lb.	.55	.62
Vitasan Crystals	lb.	.48	.53
Vulcanex	lb.	—	.53
Z-B-X	lb.	—	2.45
Zenite	lb.	.37	.40
A	lb.	.45	.48
B	lb.	.45	.47
Zenite Special	lb.	.38	.41
Zetax (coated)	lb.	.33	.35
(uncoated)	lb.	.34	.36
Zimate, Butyl	lb.	—	1.00
Zimate, Ethyl	lb.	—	1.00
Zimate, Methyl	lb.	—	1.00

ACTIVATORS

Blue Lead, Sublimed (dlvd.)	lb.	.15¾	.16¾
Fish Oil, Hydrogenated, Fatty Acid			
Hydrofol Acid (dlvd.)	lb.	.10½	.14½
Hyfac 430 (dlvd.)	lb.	.13½	.14¾
Neo-Fat H.F.O. (dlvd.)	lb.	.14	.15¾
Stearex Beads (dlvd.)	lb.	.09½	.10
Lime, Hydrated			
Arrowhead	ton	—	19.50
Sierra	ton	—	19.50
Litharge			
Eagle (dlvd.)	lb.	—	.1475
FSB (dlvd.)	lb.	—	.1475
Magnesium Oxide, Heavy			
General Magnesite 500	lb.	.05	.06½
600	lb.	.06	.08
Michigan No. 15	lb.	.0550	.0600
Permanente	lb.	.05	.06½
Magnesium Oxide, Light			
Baker's (Neoprene Grade)	lb.	—	.31
General Magnesite (Neoprene Grade)	lb.	—	.31
General Magnesite No. 101	lb.	—	.19
General Magnesite Standard	lb.	—	.22
K & M (Neoprene Grade)	lb.	—	.31
Maglite "M" (l.c.l.)	lb.	—	.31
Marine's (Neoprene Grade (l.c.l.)	lb.	—	.31
Michigan No. 30	lb.	—	.24
No. 40 Extra Light	lb.	—	.31
Witco Extra Light	lb.	.32	.35

ACTIVATORS (Cont'd)

Oleic Acid			
Emersol 210 (dlvd.)	lb.	.12¾	.14½
L.C.P. Red Oil	lb.	.12¾	.14½
Red Oil (20-24 Saponified) (dlvd.)	lb.	.12¾	.14½
Palm Oil Fatty Acid (c.l.)	lb.	—	.11
Potassium Oleate (drums)	lb.	—	.29½
Red Lead			
Eagle	lb.	—	.1575
No. 2 RM (dlvd.)	lb.	—	.1575
Sodium Laurate (drums)	lb.	—	.19
Sodium Oleate—Powder (drums)	lb.	—	.35
Paste (drums)	lb.	—	.20
Sodium Stearate—Powder (drums)	lb.	—	.35
USP Grade (drums)	lb.	—	.37
Stearic Acid, Single Pressed			
Emersol 110 (dlvd.)	lb.	.12	.12¾
Stearex B (dlvd.)	lb.	.12	.12¾
Stearic Acid, Double Pressed			
Alba (dlvd.)	lb.	.14	.17¾
S-2-A (dlvd.)	lb.	.14	.15
S-2-B (dlvd.)	lb.	.12½	.13½
Stearic Acid, Other			
Neo-Fat 1-60 (dlvd.)	lb.	.12¾	.13½
Neo-Fat 1-65 (dlvd.)	lb.	.15	.15¾
Stearite	lb.	99	.10
White Lead Basic Carbonate	lb.	.14¼	.15¾
White Lead Basic Sulfate	lb.	.13¾	.14¼
Zinc Laurate (c.l.)	lb.	—	.29
Laurex	lb.	.24	.25
Zinc Stearate	lb.	.34	.36
Aquazinc	lb.	.26	.35

Unclassified Activators

Actifat (dms.)	lb.	—	.18
Acidex	lb.	.09	.15
Aero Ac 50	lb.	.50	.56
Aktone	lb.	.20	.21
Barak	lb.	—	.60
Curade	lb.	.57	.59
D-B-A	lb.	—	1.95
Delac J	lb.	.55	.57
Dibutylamine (dlvd.)	lb.	.49	.52½
MODX-B	lb.	.20	.24
NA-11	lb.	—	.65
Palmalene (drums)	lb.	—	.15
Polyac	lb.	—	1.60
Ridacto (drums)	lb.	.22	.24
Snodotte (dlvd.)	lb.	.13½	.14½
SOAC (min. 10 dms.)	cwt.	—	8.00
SOAC-KL (min. 10 dms.)	cwt.	—	8.00

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.17	.21
Aqua Ammonia (dms.)	lb.	.031	.035
M.B.M. (l.c.l.)	lb.	—	.35

ANTI-FOAMING AGENTS

Aero Anti Foam H	lb.	—	.12½
Regular	lb.	—	.08½
D.C. Antifoam A	lb.	5.65	6.65

ANTI-OXIDANTS

Agerite Alba	lb.	2.20	2.30
Gel	lb.	.58	.60
Hipar	lb.	.82	.84
H. P.	lb.	.61	.63
Powder	lb.	.46	.48
Resin	lb.	.63	.65
Resin D	lb.	.46	.48
Stalite	lb.	.46	.48
White	lb.	1.40	1.50
Akroflex C	lb.	.61	.63
Aminox	lb.	.46	.48
Antox	lb.	.46	.48
Aranox	lb.	—	3.25
Benzoquinone	lb.	1.50	1.75
Betanox Special	lb.	.68	.70
B-L-E	lb.	.46	.48
Carvacrol	lb.	—	.78
Chlorcarvacrol	lb.	—	2.45
Deenax	lb.	.95	1.05
Eugenol C-95%	lb.	—	1.45
Flectol H	lb.	.46	.53
Flexamine	lb.	.61	.63
Gallic Acid, Tech.	lb.	1.10	1.23
USP or NF	lb.	1.27	1.40
Hydroquinone	lb.	.90	.90
Monomethylparaminophenol Sulfate	lb.	2.40	2.90
Neozone Standard	lb.	—	.75
A	lb.	.48	.50
C	lb.	—	.60
D	lb.	.46	.48

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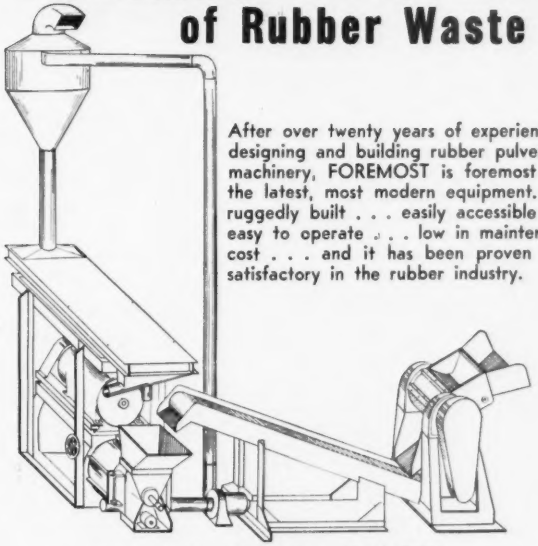
FOREMOST makes the MOST of Rubber Waste



After over twenty years of experience in designing and building rubber pulverizing machinery, FOREMOST is foremost with the latest, most modern equipment. It is ruggedly built . . . easily accessible . . . easy to operate . . . low in maintenance cost . . . and it has been proven most satisfactory in the rubber industry.

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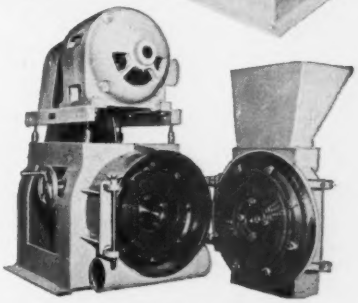
10 H.P. OR 25 H.P. CUTTER WITH AUTOMATIC FEEDER REDUCES FOAM RUBBER, RUBBER, LEATHER, OR PLASTIC DOWN TO 1/8" MESH, HAS MAXIMUM CAPACITY.



50 H.P. GRINDER PULVERIZES TO FINEST MESH DESIRED

FOREMOST MACHINE BUILDERS, INC.
82-31 51st Avenue Elmhurst, L. I., N. Y.

ANTI-OXIDANTS (Cont'd)

Oxidex	lb.	——	3.60
Paranone	**lb.**	**——**	**.75**
PDA-10	**lb.**	**.36**	**.38**
PDA-20	**lb.**	**.36**	**.38**
Permalux	lb.	——	1.85
Pyrogallic Acid, Resublimed USP Crystals	**lb.**	**2.60 2.10**	**2.65 2.15**
Resorcin, Tech. (dlvd.)	**lb.**	**——**	**.64**
Santoflex B	**lb.**	**.46**	**.53**
BX	lb.	.58	.65
35	lb.	.65	.72
Santovar-A	**lb.**	**1.30**	**1.37**
O	lb.	1.10	1.17
Santowhite Crystals	lb.	1.65	1.72
Santowhite MK	**lb.**	**1.40**	**1.52**
S.C.R. (tons)	**lb.**	**.32**	**.34**
Stabilite	lb.	.46	.48
Alba	lb.	.69	.74
L	lb.	.48	.50
White	lb.	.46	.48
Stabilizer No. 1	lb.	——	1.55
Stabilizer No. 320	lb.	——	.75
Sunolite	lb.	.20	.23
Tannic Acid, Tech.	lb.	.46	.48
Thermoflex	lb.	1.61	1.63
Thymol Eugenol	lb.	——	1.02
U.S.P.	lb.	——	3.50
V-G-B	lb.	.65	.67
Wing-Stay S	lb.	.45	.50

ANTI-SCORCHING AGENTS

Armeen HT	**lb.**	**.46**	**.54**
Benzoic Acid—Tech.	**lb.**	**——**	**.43**
Good-rite Vultrol	lb.	.55	.57
Sodium Acetate 60-62% Crystals	lb.	——	.06

ANTISEPTICS AND GERMICIDES

Arquad S	**lb.**	**.24**	**.27**
Formaldehyde (barrels)	lb.	——	.062
G-4 (bbls.)	**lb.**	**.95**	**2.75**
G-11	**lb.**	**3.50**	**5.50**
Methyl Para Hydroxy Benzoate	lb.	——	2.10
Nuodex 100 S.S. (dlvd.)	**lb.**	**——**	**1.05**
Nuodex 100 W.D. (dlvd.)	lb.	——	1.20
Nuodex Zinc 8% (dms.) (dlvd.)	lb.	——	.2125
Ortho Cresol (26°-27°)	**lb.**	**——**	**.18**
Retarder D	**lb.**	**.68**	**.76**
Soligen Drier—Copper 8% (drums)	lb.	——	.22½
Zinc 8% (dms.)	lb.	——	.21¼
Vancide	**lb.**	**——**	**.80**

ANTI-WEBBING AGENTS (for Latex)

Webnix 33	lb.	1.75	2.00

AROMATICS (DEODORANTS)

Bouquet 149	**lb.**	**——**	**3.00**
Coumarin	**lb.**	**——**	**2.75**
Curodex 19	**lb.**	**——**	**4.75**
188	lb.	——	5.75
198	lb.	——	6.75
D-6 Masking Perfume	lb.	——	1.35
Deodorant 65	**lb.**	**——**	**1.00**
Deodorant L-37	**lb.**	**2.00**	**2.40**
L-44	lb.	2.50	2.90
N.L.T.X.	lb.	1.85	2.15
Deodorant Oil GD 3427	lb.	1.70	2.00
4440	lb.	3.00	4.50
5296	lb.	.95	1.25
General Deodorant 18301	**lb.**	**——**	**2.90**
Latex Perfume 5	**lb.**	**——**	**3.25**
6	lb.	——	7.50
9	lb.	——	.65
Naugaromes (dms.)	**lb.**	**1.50**	**3.00**
Neutrodor 31	lb.	2.00	2.50
Neutrolem Delta	lb.	——	2.60
Gamma	lb.	——	2.60
Parador A	**lb.**	**1.75**	**2.25**
B	**lb.**	**.70**	**1.00**
C	**lb.**	**2.75**	**3.25**
D	**lb.**	**1.50**	**2.00**
E	**lb.**	**.25**	**.55**
F	lb.	——	.47
I	lb.	——	2.00
K	lb.	——	.43
GD 5280	**lb.**	**——**	**2.50**
GD 5348	**lb.**	**1.90**	**3.25**
Perfume Oil Bouquet Vanilla M	**lb.**	**2.40**	**2.75**
Resodor 11	lb.	2.00	2.50
12	lb.	1.45	1.75
Rodo No. 0	**lb.**	**4.00**	**4.50**
No. 10	**lb.**	**5.00**	**5.50**
Rubbarome (dms.)	**lb.**	**1.05**	**3.80**
Rubber Perfume 12	lb.	——	2.85
Russian Leather 7	**lb.**	**——**	**4.10**
Vanillin	lb.	3.00	4.00

BLOWING AGENTS

Ammonium Bicarbonate (dlvd.)	lb.	.0725	.1075
Blowing Agent CP-975	**lb.**	**——**	**.35**
Sodium Bicarbonate, U.S.P. (c.l., bags)	cwt.	——	1.95
Sponge Paste	**lb.**	**——**	**.20**
Unicel	lb.	——	.75
ND	lb.	——	1.50
S	lb.	——	.25
Urea	lb.	.0425	.0475

BONDING AGENTS

Dures 12987	**lb.**	**.48**	**.53**
Interlake Resin No. 4162	**lb.**	**——**	**1.50**
MDI	**lb.**	**7.00**	**7.75**
50	**lb.**	**3.50**	**4.00**
Pliobond 20	gal.	2.75	4.00
30	gal.	3.45	4.70
Resinite	**gal.**	**6.75**	**7.25**
Rex Compounds	**gal.**	**1.30**	**2.85**
Ty-Ply Q (BN & S)	gal.	6.75	8.00

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	8.11	8.61
Glacial—99½% (bbls.)	cwt.	14.05	14.55
Calcium Nitrate, Tech., Crystals	lb.	.12½	.15
Hydroxyacetic Acid—70% (dms.)	lb.	——	.084
Zinc Nitrate, Tech.	lb.	——	.21½

COLORING AGENTS

Black

Carbon Black—See *Reinforcing Agents*			
Aquablak B (also M, R)	lb.	.0725	.0875
Aquablak S	**lb.**	**.08½**	**.09**
Black Shield 4-35 (dms.)	**lb.**	**——**	**.0825**
Lampblack No. 10	**lb.**	**.06**	**.09**
Mapico Black Iron Oxide (50 lb. bags)	**lb.**	**.1075**	**.1100**
Raven Black Pure Iron Oxide	cwt.	10.75	11.00

Blue

Blue GD, Dispersed	lb.	——	3.95
Blue GD Paste	lb.	——	1.80
Blue YD, Dispersed	lb.	——	2.50
Milori Blue 11840 (dlvd.)	lb.	——	.42
Monastral Fast Blue CPL	**lb.**	**——**	**1.54**
PCD, Dispersed	lb.	——	2.50
Ramapo Blue	lb.	3.40	3.45
Rubber Blue X-1999	lb.	——	1.15
Stan-Tone Blue	lb.	1.40	4.00
Ultramarine	lb.	.14	.30
Vansul Blue M.B.	lb.	.80	2.30
Victoria Blue BP-262-D	lb.	2.25	2.30

Brown

Brown Iron Oxide	**lb.**	**.1075**	**.12**
Mapico Brown (50 lb. bags)	lb.	——	.1250

Green

Filo Green D-700 (and D-705)	lb.	——	.30
Green Chromium Oxide, Pure	cwt.	34.50	42.00
Green Chromium Oxide, Pure, Hydrated	cwt.	90.00	110.00
Green FD, Dispersed	lb.	——	1.50
Monastral Fast Green GSD, Dispersed	lb.	——	3.20
GSL	**lb.**	**——**	**1.71**
Permansa Green CP-594	lb.	——	1.35
Pigment Green B	lb.	——	1.35
GL-652D	lb.	.88	.93
Ramapo Green	lb.	——	4.00
Rubber Green X-1292	lb.	——	1.00
Stan-Tone Green	lb.	1.50	3.30
Vansul Green M.B.	lb.	.90	2.25

Maroon

Stan-Tone Maroon	lb.	3.00	3.05
Vansul Maroon M.B.	lb.	1.05	2.80

Orange

Molybdate Orange	lb.	——	.40
Orange FD, Dispersed	**lb.**	**——**	**2.75**
Rubber Orange X-2065	**lb.**	**——**	**2.60**
Stan-Tone Orange	lb.	1.65	4.00
Vansul Orange M.B.	lb.	2.15	2.95

Red

Antimony Trisulfide	**lb.**	**.55**	**.68**
R. M. P. Sulfur Free	**lb.**	**.63**	**.68**
R. M. P. No. 3	lb.	.55	.60
Cadmium Red	lb.	.95	1.25
Cadmolith Red (bbls.)	**lb.**	**1.20**	**1.45**
Graphic Red (dlvd.)	lb.	——	.80
Indian Red, American, Pure	cwt.	11.50	11.75
Doxco (English)	cwt.	11.50	11.75
Mapico Reds (50 lb. bags)	lb.	.1150	.1175
Oximony Iron Oxide	lb.	——	.09
Red Iron Oxide, Light	cwt.	11.50	11.75
Red PBD Dispersed	lb.	——	1.55
2BD, Dispersed	lb.	——	1.65
2BL	**lb.**	**——**	**1.15**
PBL	lb.	——	1.50
Rubanox Red CP-762 (dlvd.)	lb.	——	1.40
Rubber Red CP-339 (dlvd.)	lb.	——	1.05
Rubber Red RT-364	lb.	——	.75
Rubber Red RT-425	lb.	——	.75
Rubber Red X-1148	lb.	——	.80
Rubbered	lb.	.1150	.1175
Solfast Red CP-663 (dlvd.)	lb.	——	1.80
CP-787 (dlvd.)	lb.	——	1.30
Stan-Tone Red	lb.	1.10	3.05
Sun Burnt Red	lb.	.1150	.1175
Vansul Red M.B.	lb.	.80	2.45
Watchung Red	lb.	——	1.80

White—Lithopone

Albalith	lb.	.06½	.07½
Astrolith	**lb.**	**.06¼**	**.06⅝**
Cryptone No. 19	lb.	.08½	.09½
CB No. 21	lb.	.08½	.09½
Eagle	**lb.**	**.06¼**	**.06½**
Permalith	**lb.**	**.06¼**	**.06⅝**
Ponolith	lb.	.06½	.07¼
Sunolith	**lb.**	**.06¼**	**.06⅝**

White—Titanium Pigments

Rayox	**lb.**	**.19¼**	**.22⅛**
Ti-Cal	**lb.**	**.07¾**	**.08¼**
Ti-Pure	lb.	.21½	.22½
Titanox A—all grades (dlvd.)	lb.	.19⅛	.20⅛
B-30 (dlvd.)	lb.	.07	.07½
C (dlvd.)	lb.	.06¾	.07¼
RA—all grades (dlvd.)	**lb.**	**.21½**	**.22⅛**
RC-HT (dlvd.)	**lb.**	**.07½**	**.08**
Unitane O-220	**lb.**	**.195**	**.205**
OR-250	**lb.**	**.215**	**.225**
Zopaque	**lb.**	**.19⅝**	**.20⅛**

White—Zinc Oxide (American Process)

AZO-ZZZ 11 (and 22, 33, 44, 45)	lb.	.14	.15
Eagle	lb.	.14	.15
Horse Head Special	lb.	.14	.15
XX Red	lb.	.14	.15
XX-505	lb.	.15½	.16½
Protox 166	lb.	.14	.15
St. Joe Black Label	lb.	.14	.15
Green Label	lb.	.14	.15
Red Label	lb.	.14	.15

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	——	13

White—Zinc Oxide (French Process)

AZO-ZZZ 66	lb.	.16¾	.17¼
Eagle Green Seal	lb.	.15¾	.16¾
Eagle Red Seal	lb.	.15¾	.16¾
Eagle White Seal	lb.	.16¾	.17¼
Florence Green Seal	lb.	.15¾	.16¾
Red Seal	lb.	.15¾	.16¼
White Seal	lb.	.16¼	.17¼
Kadox 25	lb.	.16¾	.17¾
Kadox 15, 17 and 72	lb.	.14	.15
U. S. P. 12	lb.	.17¼	.18¼

White—Zinc Sulfide

Cryptone ZS-800	lb.	.20	.21

Yellow

Anchor Brand Pure Iron Oxide	cwt.	9.00	9.35
Cadmolith Yellow (bbls.)	**lb.**	**——**	**.95**
Chrome Yellow	lb.	——	.25
Chrome Yellow 12310	lb.	——	.28
Ferrox	**cwt.**	**7.50**	**8.50**
Mapico Yellow (50 lb. bags)	**lb.**	**.0900**	**.0925**
Rubber Yellow X-1940	**lb.**	**——**	**1.60**
Stan-Tone Yellow	lb.	1.00	2.25
Toluidine Yellow	**lb.**	**——**	**1.70**
YL-556-D	lb.	——	.82
Oximony Iron Oxide	lb.	——	.06¼
Vansul Yellow M.B.	**lb.**	**.90**	**1.00**
Yellow GD, Dispersed	lb.	——	1.85
GL	**lb.**	**——**	**1.35**
Zinc Yellow	lb.	——	.21

DESTABILIZING AGENTS (for Latex)

D-Stayb	lb.	——	1.60

DISPERSING AGENTS

Agchem SA-19	**lb.**	**——**	**.30**
SA-20	lb.	——	.78
Anchoid*	lb.	.24	.25
Aquasol AR 90%	**lb.**	**——**	**.24⅝**
Armeen 18	**lb.**	**.52**	**.60**
Beaconol 52	lb.	.60	.75
Darvan No. 1 (and No. 2)	lb.	.21	.30
Daxad 11 (21, 23)	lb.	.08	.35
Dilex	lb.	——	.32
Dispersaid	lb.	1.25	1.35
Halloid	lb.	.03¾	.09½
HornKem No. 1	gal.	——	1.60
No. 3G	gal.	——	1.75
No. 12	lb.	——	.17
Lomar PW	**lb.**	**.16**	**.18**
Marasperse CB	lb.	1½	.13½
N	lb.	—	.10
Rubbex	lb.	—	.27⅛
Stan-Chem BQC	**lb.**	**.12¼**	**.17⅛**
1067	lb.	—	.13½
1471	lb.	.1687	.2187
2251	lb.	.12¼	.17⅛
Trenamine D-25	**lb.**	**.32½**	**.36**
D-100	lb.	.48	.51
Triethanolamine (drums) (dlvd.)	lb.	.21½	.23½
Triton R-100	lb.	.13½	.24
Yelkin TT	**lb.**	**——**	**.22**
Zinsper	lb.	——	.15

EXTENDERS

Advagum 1098	lb.	——	.62
Bunaweld Polyaer No. 780	**lb.**	**——**	**.22**
No. 5514	**lb.**	**——**	**.30**
D-92 (and D-93) (dms.)	lb.	——	.12
Extender 600	lb.	——	.1480
PR-162 Latex (dms.)	gal.	1.00	1.60
Synprolac	lb.	——	.19
Synprowax	lb.	.16	.19
Vistanex	lb.	——	.32

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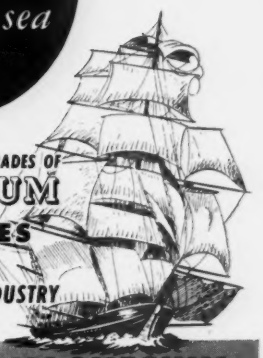

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FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite	lb.	.15	- .95
Lionite	lb.	.09¾	- .90
Pumice	lb.	.03	- .05
Aluminum Hydrate	lb.	.07	- .10
Aluminum Silicate			
Silical	ton	37.00	- 55.00
Marter White	ton	18.50	- 30.00
Barium Carbonate (l.c.l.)	ton	72.50	- 90.00
Barytes			
No. 1 Floated, White	ton	34.85	- 49.65
No. 2 Floated, Unbleached	ton	——	- 32.85
No. 22 Barytes (c.l.)	ton	——	- 18.37
Foam A	ton	——	- 34.85
Bentomite (c.l.)	ton	——	- 11.50
SPV Volclay (c.l.)	ton	——	- 11.50
Blanc Fixe	ton	72.50	-120.00
Calcium Carbonate			
Atomite (c.l.)	ton	——	- 30.00
B.I. White No. 1 (c.l.)	ton	——	- 7.50
B.I. White No. 2 (c.l.)	ton	——	- 7.00
B.I. White No. 390 (c.l.)	ton	——	- 5.75
Blue-Star XX	ton	——	- 15.00
Calcene T	ton	45.00	- 55.00
Caltec	ton	40.00	- 67.50
Calwhite	ton	——	- 17.00
Camelwite	ton	——	- 30.00
Kalite (c.l.)	ton	——	- 40.00
Lesamite (c.l.)	ton	——	- 27.50
Lim-Cal (c.l.)	ton	——	- 12.50
Micromite	ton	——	- 30.00
Millical (c.l.)	ton	——	- 27.50
Multiflex	ton	——	-105.00
Non-Fer-Al	ton	——	- 20.00
Purecal M	ton	45.00	- 52.50
U	ton	105.00	-125.00
Sierracal	ton	15.00	- 18.50
Super Multiflex	ton	——	-145.00
Surfex (c.l.)	ton	——	- 30.00
Suspenso (c.l.)	ton	——	- 22.00
Witcarb R (c.l.)	ton	105.00	-120.00
R-12 (c.l.)	ton	45.00	- 66.00
York White	ton	——	- 9.00
Calcium Silicate			
Silene EF	ton	110.00	-120.00
Calcium Sulfate, Anhydrous			
Snow White Filler	ton	——	- 18.00
Calcium Sulfate, Hydrous			
Crysta-Cal (c.l.)	ton	——	- 12.50
Terra Alba No. 1	ton	12.00	- 14.40
Chalk Whiting (l.c.l.)	lb.	.0150	- .0175
Recco Paris Whiting	ton	——	- 28.00
Clay			
Alsikte (c.l.)	ton	14.00	- 22.50
Alsite (c.l.)	ton	——	- 14.00
Aluminum Flake	ton	22.50	- 60.00
A.S.P. No. 1 (c.l.)	ton	——	- 35.00
No. 11 (c.l.)	ton	——	- 40.00
Buca (c.l.)	ton	——	- 45.00
Burgess No. 20	ton	——	- 35.00
No. 30	ton	——	- 37.00
Burgess Iceberg	ton	——	- 50.00
Burgess Polyclay	ton	——	- 45.00
Catalpo (c.l.)	ton	——	- 35.00
Champion	ton	——	- 14.00
C.S.D. (c.l.)	ton	——	- 13.00
Crown	ton	——	- 14.00
Dixie (c.l.)	ton	——	- 14.00
Hi-White R	ton	——	- 13.50
Hydratex R	ton	——	- 30.00
Kaolloid Clay (c.l.)	ton	——	- 10.50
Markham (c.l.)	ton	14.00	- 35.00
McNamee (c.l.)	ton	——	- 13.50
Oldham (c.l.)	ton	13.50	- 35.00
Paragon	ton	——	- 13.50
Pigment 5	ton	21.85	- 36.00
Pigment 22	ton	16.50	- 22.50
Pigment 33	ton	——	- 37.00
Recco (c.l.)	ton	——	- 14.00
Stellar-R	ton	——	- 50.00
Suprex	ton	——	- 14.00
Upton	ton	19.50	- 21.50
Whitetex (c.l.)	ton	——	- 50.00
Witco No. 1 (c.l.)	ton	14.00	- 37.50
No. 2 (c.l.)	ton	14.00	- 37.50
Diatomaceous Earth	ton	30.00	- 50.00
Kaylorite (c.l.)	ton	——	- 30.00
Lorite	ton	——	- 30.00
Dolomite (c.l.)	ton	11.00	- 12.00
Flock			
Cotton, white and colored lb.		.10	- .20
Filfloc F 40-9000	lb.	——	- .16
Filfloc F 6000	lb.	——	- .22
Polycel	ton	145.00	-178.00
Rayon, bleached or dyed.	lb.	.81	- 1.50
Rayon, grey	lb.	——	- .18
Rayon, pink	lb.	——	- .14
Solka-Floc (l.c.l.)	lb.	.05	- .15
Wool, bleached or dyed.	lb.	.70	- 1.00
Glue, Bone (dlvd.)	lb.	.18	- .20½
Graphite	lb.	.05	- .20
Ground Glass (l.c.l.)	lb.	.04	- .06
Leather, Shredded	lb.	.05	- .17
Lignin	lb.	.03	- .06
Indulin	lb.	.09	- .10
Limestone, Pulverized	ton	3.25	- 10.00
Micro Velva	ton	45.00	- 47.00
Velvet Filler, Regular	ton	20.00	- 22.00
Magnesium Carbonate	lb.	.09	- .10
K & M Clearcarb	lb.	.1175	- .1225
Magnesium Oxide	lb.	.05	- .06
Magnesium Silicate	ton	18.00	- 35.00
Atrex	ton	25.00	- 27.00
Asbestol	ton	20.00	- 22.00
Blue Star Talc	ton	——	- 23.00

FILLERS (Cont'd)

L.S. Silver	ton	23.50	- 25.50
Sierra White	ton	21.25	- 23.25
Mica	lb.	.01¼	- .07¾
Concord	lb.	.0675	- .0750
Micro-Mica	lb.	.06¾	- .07½
Mineralite (c.l.)	ton	25.00	- 40.00
Silversheen	lb.	.06¾	- .07½
Triple A Mica (c.l.)	ton	——	- 25.00
Vermiculite	lb.	.075	- .085
Wet Ground Biotite Mica	lb.	.05½	- .06¼
Wet Ground Mica No. 160	lb.	.06¾	- .07½
Mineral Black			
Keystone 126	ton	15.00	- 20.00
Pyrophyllite			
Pyrax A (c.l.)	ton	——	- 12.50
WA (c.l.)	ton	——	- 15.00
Silica	ton	16.00	- 27.00
Blue Star	ton	——	- 21.50
Hi-Sil	ton	220.00	-240.00
Slate, Powdered (l.c.l.)	ton	15.00	- 20.00
Talc, Domestic	ton	9.00	- 20.00
Nytal 200	ton	23.00	- 40.00
300	ton	35.00	- 52.00
Walnut Shell Flour	ton	40.00	-100.00
Whiting, Commercial	ton	——	- 12.00
Cameline (c.l.)	ton	8.50	- 10.00
C-C-O White	ton	——	- 17.00
Keystone (c.l.)	ton	——	- 16.00
Rambo No. 1 White	ton	——	- 6.50
No. 6 White	ton	——	- 9.00
Snowflake (c.l.)	ton	——	- 18.00
Veroc (c.l.)	ton	——	- 6.50
Welco (c.l.)	ton	——	- 7.50
York White R (c.l.)	ton	——	- 8.00
Wood Flour	ton	20.00	- 62.18

FINISHING MATERIALS, SURFACE

Beaco Finishes	gal.	1.05	- 1.35
Black Out	gal.	4.50	- 8.00
Shellac, Orange Gum	lb.	.45	- .54
VanWax	gal.	1.25	- 1.30

FLAME RETARDANTS

Celluflux	lb.	.36½	- .38½
Chlorinated Paraffin 42	lb.	——	- .12¾
Halowax	lb.	.34	- .39
Zinc Borate 3167	lb.	.17¾	- .18½
Zyrox	lb.	.65	- .79

LUBRICANTS, MOLD

Aquadag	lb.	3.15	- 3.45
Aquarex D	lb.	——	- .76
L Paste	lb.	——	- .85
ME	lb.	——	- .92
MDL Paste	lb.	——	- .30
WA Paste	lb.	——	- .25
Akro Gel	lb.	——	- .165
Borax, Granular (l.c.l.)	ton	70.00	- 80.00
Colite Concentrate (dms.)	gal.	——	- .90
Concentrex	gal.	——	- .25
D.C. 7 Compound	lb.	6.20	- 6.80
D.C. Emulsion No. 35	lb.	1.77	- 3.50
35A	lb.	1.77	- 3.50
D.C. Mold Release Fluid	lb.	4.30	- 6.00
Dipex	lb.	.14	- .18
Dri-Lube	lb.	——	- .22
Erlen Mold Lubricant	gal.	1.25	- 1.50
Glydag	lb.	1.30	- 2.00
Hawkeye Flake (dlvd.)	lb.	——	- .12
Kokobace	lb.	——	- .12
Latex-Lube (dlvd.)	lb.	——	- .18½
Liqui-Lube (dlvd.)	lb.	——	- .14¾
Lubrex	lb.	.25	- .30
Migralube	lb.	——	- .37
Moldeze No. 1	gal.	——	- 36.00
No. 3	gal.	——	- 7.50
Mold Lubricant No. 72 Conc.	gal.	2.50	- 4.00
No. 735	gal.	1.26	- 2.75
No. 765	gal.	2.50	- 4.00
No. 767	gal.	1.52	- 3.00
No. 768	gal.	2.50	- 4.00
No. 769	gal.	1.20	- 2.70
Mold-Slick	lb.	.202	- .215
Orvus WA Paste (dms.)	lb.	——	- .25
Prodag	lb.	.25	- .38
Purity Flake (dlvd.)	lb.	——	- .14
Redotex Flakes (dlvd.)	lb.	.13¾	- .14
Powder (dlvd.)	lb.	.13⅞	- .14⅛
Rubber-Flo	gal.	1.15	- 1.50
Rubber-Glo	gal.	——	- .94
Rusco Mold Paste	lb.	——	- .25
Sericite (l.c.l.)	ton	65.00	- 75.00
Thermalube	lb.	——	- .11
Ulco Mold Soap	lb.	.16	- .29
Werkrite Flakes (dlvd.)	lb.	.09⅞	- .10⅛
Powder (dlvd.)	lb.	.10⅜	- .11¼

LUBRICANTS, RUBBER

Extrud-o-Lube	gal.	——	- 1.57
G.B. Naphthenic Neutrals	gal.	.11	- .18
Propylene Stearate (drums)	lb.	——	- .40

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.34	- .36
Calcium Stearate	lb.	.32	- .34
Glycerized Lubricant	gal.	——	- 1.25
Polyethylene Glycol	lb.	——	- .23
Rexanol	lb.	——	- .13
Separex	lb.	——	- .15
Slab-Dip	lb.	——	- .15
Wet-Zinc	lb.	——	- .22
Zinc Stearate	lb.	.34	- .36

MOLD CLEANERS

Actusol (dlvd.)	gal.	——	- 1.45
Metso 99	cwt.	3.75	- 5.40
Granular	cwt.	3.25	- 4.75
Rubber-Sol	gal.	——	- 2.75
Shelblast	ton	80.00	-140.00
Sprex A.C. (dlvd.)	lb.	——	- .15½

PEPTIZING AGENTS

Peptizer P-12	lb.	.84	- .90
RPA 2	lb.	——	- .65
3	lb.	——	- .46
3-RO	lb.	——	- .49
5	lb.	——	- .57

PLASTICIZERS & SOFTENERS

AA (drums)	lb.	——	- .18¼
Acto 500	lb.	——	- .09
Adipol BCA (dms.)	lb.	.44½	- .45
2EH	lb.	45½	- .46
10A	lb.	44½	- .45½
American Pine Tar	lb.	.0350	- .0473
Arneel	lb.	.26	- .36
Arolene 1980 (c.l.)	lb.	——	- .10
Aromatic Tar	gal.	.0573	- .1973
Bardol	lb.	.02½	- .03½
B	lb.	.05½	- .05¾
Bayol D	gal.	——	- .382
F	gal.	——	- .52
Beeswax, Refined & Bleached	lb.	—	
Yellow Refined	lb.	——	- .59
Bondogen	lb.	.55	- .60
B.R.C. No. 20	lb.	.0125	- .0[illegible]
B.R.H. 2	lb.	.02	- .029
BRS 700	lb.	.0175	- .026
B.R.T. 3	lb.	.024	- .025
4	lb.	.0225	- .0235
7	lb.	.0265	- .0275
B.R.V.	lb.	.0325	- .049
Bunarex Resins	lb.	.05¾	- .06
Bunatak M	lb.	——	- .20
O	lb.	——	- .18
R	lb.	——	- .14
U	lb.	——	- .15
No. 21	lb.	——	- .08
No. 90	lb.	——	- .08
No. 865	lb.	——	- .17
No. 1080	lb.	——	- .09½
Burgundy Pitch	lb.	.1026	- .1050
Butac	lb.	.10½	- .11½
Butoxyethyl Diglycol Carbonate	lb.	.40	- .41
Butyl Benzyl Sebacate	lb.	.52	- .54½
Butyl Carbitol Perlargonate (dms.)	lb.	——	- .642
Butyl Cellosolve Perlargonate (dms.)	lb.	——	- .68
Butyl Palmitate	lb.	——	- .26½
Butyl Roleate	lb.	.176	- .18
Butyl Stearate-CP (dms.)	lb.	.27	- .28
BWH-1	lb.	——	- .14
Califlux 510, 550	lb.	.025	- .0325
G.P.	lb.	.0125	- .02
R-100	lb.	.04½	- .05¼
TT	lb.	.02	- .02¾
Campol (t.c.)	ton	——	- 42.00
Candelilla Wax Prime	lb.	.67	- .75
Capryl Benzyl Sebacate	lb.	.59½	- .62
Carbonex	lb.	.0325	- .0375
S Flakes	lb.	.04	- .045
S Plastic	lb.	.0385	- .0435
644	lb.	.0375	- .0425
Carbowax 4000 (drums)	lb.	——	- .29
Cardolite 615	lb.	.33¾	- .36¼
816	lb.	25¾	- .28¾
Carnauba Wax, Crude	lb.	.83	- .92
Refined	lb.	.87	- .94
Substitute	lb.	.45	- 1.08
Yellow	lb.	1.15	- 1.20
Celluflex	lb.	.36½	- .38½
Ceresine Wax	lb.	.14	- .26
Contogum	lb.	.06¾	- .10¼
CTLA Polymer	gal.	.15	- .29
Cumar Resins	lb.	.05½	- .14½
D.C. 200 Fluid	lb.	5.20	- 6.00
D.B.M.	lb.	——	- .30
Degras, Common	lb.	——	- .12
Diamylphenol (l.c.l., dms.)	lb.	——	- .28
Dibenzyl Sebacate	lb.	.65	- .67½
Dibutoxethyl Sebacate	lb.	——	- .5634
Diethyl Phthalate (t.c.)	lb.	——	- .24½
Dibutyl Sebacate—Tech.	lb.	.47½	- .50
C.P.	lb.	.49½	- .52
Dicapryl Adipate	lb.	.41	- .43½
Dicapryl Phthalate	lb.	.37	- .39½
Dicapryl Sebacate	lb.	.53	- .55½
Di-Carbitol Phthalate (dms.)	lb.	.43½	- .44
Dicyclohexyl Phthalate	lb.	——	- .42
Dielex	lb.	.0625	- .0650
Diethyl Phthalate (t.c.)	lb.	——	- .24½
Dihexyl Adipate	lb.	.32½	- .35
Dihexyl Phthalate	lb.	.29	- .31½
Dihexyl Sebacate	lb.	.41	- .43½
Di Isobutyl Azelate (dms.)	lb.	.54	- .57
Di-iso-octyl Adipate (dms.)	lb.	.42	- .44½
Di-iso-octyl Phthalate (t.c.)	lb.	.40	- .42½
Dimethyl Phthalate	lb.	——	- .25
Dimethyl Sebacate	lb.	.68	- .70½
Dinopol (dms.)	lb.	.523	- .533
Dioctyl Phthalate (dms.)	lb.	.36	- .38½
Dioctyl Sebacate (dms.)	lb.	.54	- .56½
D.I.O.P. (dms.)	lb.	.41½	- .42½
Dipolymer Oil	gal.	.33	- .38

CROWN CLAY

SOUTHEASTERN CLAY CO.
AIKEN, SOUTH CAROLINA

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ERNEST JACOBY & CO.....Boston
The C. P. HALL CO. of Calif.....Los Angeles
DELACOUR-GORRIE, Ltd. .....Toronto

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RAY-BRAND
Centrifuged Latex

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72-75% Latex Concentrate

- Normal Latex
- GR-S Latex Concentrate
- Natural and Synthetic Latex Compounds

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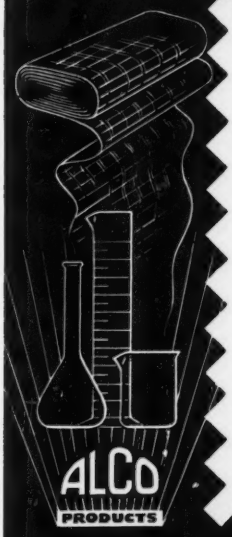

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COMPOUNDING DISPERSIONS OF RUBBER CHEMICALS

VULCARITES are supplied as individual dispersions of zinc oxide, sulfur, antioxidants and accelerators. Composite dispersions of these chemicals are also available.

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SOUTHERN DISTRIBUTORS
WICA COMPANY INC.
CHARLOTTE, N.C.

PLASTICIZERS & SOFTENERS (Cont'd)

Dispersing Oil No. 10	lb.	.05¼	.055
Dutrex A (B, 5, 6)	lb.	.02½	.03¼
15	gal.	.10	.189
20, 21, 25	lb.	—	.03
Elastex 10-P	lb.	.40	.42½
50-B	lb.	.34½	.37
DCHP	lb.	.42½	.43½
Estac	lb.	—	.16
Ethox (dms.)	lb.	.44½	.45
Flexol B-400	lb.	.27	.29
DOP	lb.	.40	.42½
TOF	lb.	.39½	.42
3GH	lb.	.42	.44
3GO	lb.	.51½	.53½
4GO	lb.	.36	.38½
8HP	lb.	.38	.40½
8N8	lb.	.37½	.40
Galex W-100	lb.	.13¾	.15
G. B. Light Process Oil	lb.	.025	.0325
G. B. Napthenic Neutrals, Harflex 500 (dmsg.)	lb.	.34	.36½
Hercolyn (dlvd.)	lb.	.16	.16½
Herron-H.T.	gal.	.2400	.2700
Herron-Plas	lb.	.0350	.0375
Herron-Wax	lb.	.0500	.0550
HT-200	lb.	.45¾	.53
Indonex 632½ (633½, 634½, 638½)	gal.	.1100	.1700
Indopol H-300 (bbls.)	gal	1.12	1.16
JMH	lb.	—	.85
Kapsol	lb.	.34½	.35
KF 23 (dms)	lb.	.34½	.35
70 (dms.)	lb.	.38½	.39
120 (dms.)	lb.	.37½	.38
140 (dms.)	lb.	.49½	.50
150 (dms.)	lb.	.34	.34½
201	lb.	.41½	.42
Kremol 40	gal.	.36	.46
50	gal.	.36	.46
Kronisol (drums)	lb.	.38½	.39
Kronitex (drums)	lb.	.30½	.31
Lanolin, Tech. Anhydrous	lb.	.23	.25
Lead Oleate	lb.	—	.30½
Lindol		.29	.45
2-Mercaptoethanol (drums)	lb.	—	.75
Methox (dms.)	lb.	.41	.41¾
Methyl Laurate	lb.	.25	.27
Methyl Oleate	lb.	—	.20
Methyl Stearate (dms.)	lb.	—	.30
Monoplex DBS	lb.	.51	.52
Monoplex DOS	lb.	.55½	.56½
5 (dms.)	lb.	.70	.71
11 (dms.)	lb.	.50	.51
16 (dms.)	lb.	.45	.46
Montan Substitute No. 506	lb.	.32	.33
Montan Wax, Crude	lb.	.18	.20
Montan Wax (c.l.)	lb.	.15	.18
Monty Wax	lb.	—	.30½
Natac	lb.	.10	.11
Neolene 210 (t.c.)	lb.	—	.16
212 (t.c.)	lb.	—	.14
220 (t.c.)	lb.	—	.15
Nerium	lb.	—	.09
Nevillac Resins (dms.)	lb.	.23	.45
Neville Resins (dms.)	lb.	.10½	.15½
Nevindene Resins (dms.)	lb.	.12½	.15½
Nevinol (dms.)	lb.	—	.17
Nevoil	lb.	.02½	.04¼
Nevtex 10 (dms.)	lb.	.08¾	.10½
Nuba 1 (and 2) (dms.)	lb.	—	.04
3X (dms.)	lb.	.05¼	.06¼
15 (and 30) Oil (dms.)	lb.	—	.24
781 Oil (dms.)	lb.	—	.27
No. 480 Oil Proof Resin	lb.	—	.13½
Obonex Q10 (dms.)	lb.	.40½	.41½
Opalwax	lb.	.37	.38
Ortho-Nitrobiphenyl	lb.	.06	.11
Ozokerite Wax No. 64 White	lb.	.31	.32
Yellow	lb.	.25	.26
P-1 (and 4)	lb.	—	.28½
P-4C	lb.	—	.38½
P-8	lb.	—	.27½
P-75	lb.	.66	.72
Pale 4 (and 1000)	lb.	—	.24
Palm Oil	lb.	—	.11
Paradene Resins (dms.)	lb.	.05	.06
Para Flux (dms.)	gal.	.1825	.1925
2016 (dms.)	gal.	.22	.23
Para Lube (l.c.l.)	lb.	.046	.048
Paraplex G-25	lb.	.69	.70
G-40	lb.	.43	.44
G-50	lb.	.39½	.40¾
G-60	lb.	.39½	.40½
Parmo	lb.	.06	.13½
Pepton 22	lb.	.72	.75
PG-16 (drums)	lb.	—	.23½
Picco 10 (and 25)	lb.	—	.12
75 (and 100)	lb.	—	.11½
Rubber Resin 100	lb.	.13¼	.14
S.O.S.	gal.	.29	.34
Piccociser 30	lb.	.05½	.06
Piccolastic A (and B, C, D, E)	lb.	.22	.22½
F	lb.	.139	.144
Piccolyte S Resins	lb.	.0795	.1245
Piccolyte WW Resins	lb.	.45	.47
Piccoumaron Resins	lb.	.05	.14½
Piccovar	lb.	.09¼	.11¾
Piccovol	lb.	.02½	.04
Pictar	gal.	.25	.30
Plas-Blend 360	lb.	.03	.04
Plastac M	lb.	—	.09¾
Plasticizer 2286	lb.	—	.25

PLASTICIZERS & SOFTENERS (Cont'd)

Plasticizer SC	lb.	.49	.52
Plasticizer VA-1	lb.	—	.40
Plasticizer XP-3	lb.	—	.50
Plastoflex 3	lb.	—	.50
50	lb.	—	.38
J-21	lb.	—	.41
Plastogen	lb.	.07¾	.08
Plastolein 9050	lb.	—	.45
9055	lb.	—	.37
9058	lb.	—	.45
9250	lb.	—	.32
9715	lb.	—	.36
Plastolein X-55 (dms.)	lb.	—	.60
X-148 (dms.)	lb.	—	.70
Pratone	lb.	.27	.30
Polymel D	lb.	—	.20
Polymel Liquid	gal.	.12	.17
Polymel Resins	lb.	.029	.05
Process Oil C-225 (c.l.)	gal.	—	.22
Propylene Stearate (dms.)	lb.	—	.32
PT 400 Pine tar (600, 800) (t.c., dms.)	lb.	.0350	.0473
Reogen	lb.	.11¾	.12
465 Resin (drums)	lb.	.05	.05½
Resin 731-C	cwt.	—	13.50
Resin C	lb.	.0250	.0335
Resinex	lb.	.03¼	.04
L-4	lb.	.02¼	.03
Ridbo 369 (drums)	lb.	.08	.09
369-F (drums)	lb.	—	.12
Rosin Oil	gal.	.54	1.20
R.P.A. No. 2	lb.	—	.65
No. 3	lb.	—	.46
No. 5	lb.	—	.57
R.S.O. Softening Oil	lb.	.03	.05
Rubberol	lb.	—	.21½
Rubtar	gal.	—	.40
Santicizer B-16	lb.	.50	.52
E-15	lb.	.47	.49
M-17	lb.	.44	.46
No. 107	lb.	.40	.42½
No. 140	lb.	.29	.31
No. 141	lb.	.40	.42½
No. 160	lb.	.34	.36
Sealol 42	gal.	—	1.10
Sherolatum	lb.	.02½	.04½
Sheroscope L	lb.	.13¾	.15
Softener No. 20	gal.	.09	.25
S.P.C.	lb.	—	.19½
Staflex IXA	lb.	.34	.36
Stanolind Petrolatum	lb.	.037	.081
Wax	lb.	.25	.30
Staybelite Resin (dms.)	cwt.	—	9.00
Sunny South Burgundy Pitch	lb.	.0774	.0789
Sunny South Pine Tar	lb.	.0350	.0473
Sunny South Rosin Oil	gal.	.47	.63
Superla Wax	lb.	.25	.30
Syncera Wax	lb.	.175	.225
Synplasticizer	lb.	—	.10
Syn Tac (c.l.)	gal.	—	.33
Tar, Refined	gal.	.12	.17
K-Tarnel NR (t.c.)	lb.	—	.0851
Terpene A	gal.	—	.65
TP-90B	lb.	—	.65
TP-95	lb.	—	.55
TP98	lb.	—	.50
Triacetin	lb.	.34	.45
Tricresyl Phosphate	lb.	.29	.31
Turgum S	lb.	.08¾	.09¾
Vanadiset A	gal.	.13	.20
Vanadiset B, C, D	lb.	.022	.055
Pulverized	lb.	.064	.09
Solution	gal.	.40	.65
Vistac No. 1	gal.	—	1.32
No. 2	gal.	—	1.66
No. 4	gal.	—	1.80
Witresin—Granular	ton	41.00	43.00
Solid	ton	36.00	38.00

PROCESSING AIDS

Castor Oil, Processed (dms.)	lb.	—	.21¼
Refined (drums)	lb.	—	.16¼
Castorwax (min. 400 lbs.)	lb.	—	.31½
Dutrex 7	lb.	.02½	.03¾
30	gal.	.24	.27
ELA	lb.	—	.80
Heron S.P.O.	lb.	.22	.23
Millrex	lb.	—	.15
Resin No. 510	lb.	.13½	.16½
Zyrox	lb.	.65	.79

PROTECTIVE & STABILIZING AGENTS

Acacia	lb.	.12¾	.21
Agchem SA-9 (to SA-12)	lb.	.65	1.02
Alpha Protein	lb.	.19	.23
Ammonium Alginate	lb.	—	.95
Aroostoocrat	lb.	—	.07½
Carob Bean Flour	lb.	.33	.35
Casein	lb.	.21	.28
Ethylene Diamine 68%	lb.	.57	.58
Karaya Gum	lb.	.20	.50
Polycin 781	lb.	—	.22½
Prosein	lb.	.0575	.0605
Rex Compound No. 2801	lb.	—	.15
Stablex B	lb.	—	.95
Tragacanth Flakes	lb.	.60	1.35

RECLAIMING AGENTS

Armeers C	lb.	.50	.58
T	lb.	.42	.50
No. 517 H.B. Oil	gal.	.11½	.16¾
535	gal.	.22	.27
C-6 Oil (and 28, 32)	gal.	.33	.38

RECLAIMING AGENTS (Cont'd)

C-10 Oil	gal.	.25	.30
C-33 Oil	gal.	.17½	.22½
Caustic Soda—Flake 76% (c.l., drums)	cwt.	—	3.45
Liquid 50% (t.c.)	cwt.	—	2.40
Solid 76% (c.l., dms.)	cwt.	2.50	3.05
Cresylic Acid (99-100%)	gal.	1.55	1.69
D-4	gal.	.23	.28
E-5	gal.	.21	.26
G. B. Reclaiming Oil	gal.	.12	.18
Heavy Aromatic Naphtha (t.c.)	gal.	—	.125
LX-77 Reclaiming Solvent	gal.	.21	.30
LX-572 Reclaiming Oil	gal.	.23	.28
Neo-Fat D-242	lb.	.05½	.07¾
PKR 1	gal.	.15	.35
PT 67 Light pine oil	gal.	.60	.70
PT 101 Pine tar oil	lb.	.0350	.0473
PT 150 Pine solvent	gal.	.44	.45
Q Oil	gal.	.246	.296
Reclaiming Oil 1621	lb.	.03	.04
Reclaiming Oil 3186 (t.c.)	gal.	.28	.38½
Reclaiming Oil 3186-G	gal.	.25	.36½
Reclaiming Reagent No. 4	lb.	.12	.15
R.P.A. No. 3	lb.	—	.46
Soda Ash (c.l., bags)	cwt.	—	1.40
Solvenol 1 (dms.)		—	.36
Solvent 534	gal.	.20½	.26½
Solvent Oil 21	gal.	.24	.29
C-42	gal.	.25	.30
Union Solvent 4060-O	gal.	—	.147
X-1 Resinous Oil	lb.	.0190	.0250
X-60 Solvent	gal.	.24	.32

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98	lb.	.0690	.1175
Continental F	lb.	.0690	.1125
Croflex	lb.	.0690	.1125
Crow	lb.	.0690	.1125
Dixiedensed (and S)	lb.	.0690	.1125
Kosmobile (and S)	lb.	.0690	.1125
Kosmos T	lb.	.0690	.1125
Micronex HPC	lb.	.0690	.1125
Spheron 4	lb.	.0690	.1170
Witco Disperso No. 6	lb.	.0690	.1125

Channel, Medium Processing (MPC) (bags)

Atlantic MPC-95	lb.	.0690	.1175
Continental A	lb.	.0690	.1125
Croflex TH	lb.	.0690	.1125
Dixie R-1	lb.	.0690	.1125
Dixiedensed HM (and S-66)	lb.	.0690	.1125
Huber Arrow TX	lb.	.0690	.1150
Kosmobile HM (and S-66)	lb.	.0690	.1125
Kosmos M	lb.	.0690	.1125
Micronex Standard	lb.	.0690	.1175
Spheron 6	lb.	.0690	.1170
Texas M	lb.	.0690	.1125
Witco Disperso No. 1	lb.	.0690	.1125

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42	lb.	.0690	.1175
Continental AA	lb.	.0690	.1125
Croflex 77	lb.	.0690	.1125
Dixiedensed 77	lb.	.0690	.1125
Kosmobile 77	lb.	.0690	.1125
Micronex W-6	lb.	.0690	.1175
Spheron 9	lb.	.0690	.1170
Texas E	lb.	.0690	.1125
Witco Disperso No. 12	lb.	.0690	.1125
Wyex	lb.	.0690	.1150

Channel, Conductive (CC) (bags)

Dixie 5 dustless	lb.	.0800	.1375
Kosmink dustless	lb.	.0800	.1375
Spheron C	lb.	.1200	.1600
Spheron N	lb.	.2200	.2500
Voltex	lb.	.1800	.2150

Furnace, Fast Extruding (FEF) (bags)

Statex M	lb.	.0550	.0950

Furnace, High Modulus (HMF) (bags)

Continex HMF	lb.	.0500	.0900
Dixie 40	lb.	.0500	.0900
Dixie 50	lb.	.0350	.0950
Kosmos 40	lb.	.0500	.0900
Kosmos 50	lb.	.0550	.0950
Modulex	lb.	.0500	.0900
Statex 93	lb.	.0500	.0900
Sterling L	lb.	.0500	.0900
Sterling SO	lb.	.0550	.0950

Furnace, Medium Abrasion (MAF) (bags)

Philblack A	lb.	.0550	.0950

Furnace, Reinforcing (RF) (bags)

Dixie 60	lb.	.0740	.1125
Kosmos 60	lb.	.0740	.1125

Furnace, Semi-Reinforcing (SRF) (bags)

Continex SRF	lb.	.0350	.0775
Dixie 20	lb.	.0350	.0750
Essex	lb.	.0350	.0775
Furnex	lb.	.0350	.0750
Gastex	lb.	.0350	.0750
Kosmos 20	lb.	.0350	.0750
Pelletex	lb.	.0350	.0750
Seminex	lb.	.0350	.0775
Sterling NS	lb.	.0350	.0750
Sterling R	lb.	.0350	.0750
Sterling S	lb.	.0350	.0750

Stamford

"FACTICE" VULCANIZED OIL

(REG. U. S. PAT. OFF.)

Our products are engineered to fill every need in natural and synthetic rubber compounding wherever the use of vulcanized oil is indicated.

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Continuing research and development in our laboratory and rigid production control has made us the leader in this field.

The services of our laboratory are at your disposal in solving your compounding problems.

THE STAMFORD RUBBER SUPPLY CO.

STAMFORD, CONN.

Makers of Stamford "Factice" Vulcanized Oil Since 1900

(Reg. U.S. Pat. Off.)

A-C SUPPLY CO.

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Electrical Equipment for

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P. O. BOX 991 AKRON, OHIO

Plant and Office: **Cuyahoga Falls, Ohio** ***Telephone (Akron):*** **WAlbridge 1174**

REINFORCING AGENTS—CARBON BLACK (Cont'd)

Furnace, Fine (FF) (bags)

Statex B	lb.	.0575	.0975
Sterling 99	lb.	.0650	.1050
Sterling 105	lb.	.1200	.1600

Furnace, High Abrasion (HAF) (bags)

Aromex	lb.	.0740	.1125
Philblack O	lb.	.0740	.1140
Vulcan 3	lb.	.0740	.1170

Furnace, Very Fine (VFF) (bags)

Statex K	lb.	.0740	.1200

Thermal, Fine (FT) bags)

P-33	lb.	—	.0500

Thermal, Medium (MT) (bags)

Thermax (c.l.)	lb.	—	.0300
Thermax, Stainless	lb.	—	.0350

REINFORCING AGENTS—MISCELLANEOUS

Darex Copolymer No. 3 (and X34)	lb.	.35	.42
No. X43	lb.	.36	.38
Darex Copolymer Latex No. 3 (and X34)	lb.	.36½	.50
Durez 12687 (and 12707)	lb.	—	.32
Durez 13355	lb.	—	.26
Good-Rite Resin 50	lb.	.36	.38
Marbon S and S-1	lb.	.36	.43
8000	lb.	.36	.43
Marmix	lb.	.36	.43
Pliolite Latex 190	lb.	.35	.39
Pliolite S6 Resin	lb.	.36	.37
C-3 Masterbatch	lb.	.47	.48
C-4 Masterbatch	lb.	.45	.46
G Masterbatch	lb.	.35	.36
G50 Masterbatch	lb.	.35	.36
N Masterbatch	lb.	.40	.41
R Masterbatch	lb.	.38	.39
Polyco 220	lb.	.13	.15

RETARDERS

Dutch Boy Normasal	lb.	—	.41¾
ESEN	lb.	—	.36
Retarder ASA	lb.	—	.45
Retarder PD	lb.	—	.36
Retarder W	lb.	—	.43
Retardex	lb.	.47	.50

RUBBER SUBSTITUTES

Mineral Rubber

38	ton	38.00	40.00
Black Diamond	ton	38.00	40.00
Byerlyte	ton	47.00	54.00
Gilsonite, Selects (c.l.)	ton	33.50	36.00
Hard Hydrocarbon (dms.)	ton	42.50	44.50
Herron Flake	ton	48.50	49.50
Mineral Rubber, solid	ton	42.50	44.50
Pioneer	ton	35.00	46.00

Vulcanized Vegetable Oils (Factice)

Amberex	lb.	.28	.32
Brown	lb.	.1310	.1955
Dispersed	lb.	.22	.42
Neophax	lb.	.16	.24
White	lb.	.13	.24

Miscellaneous Rubber Substitutes

G.B. Asphaltenes	lb.	.06	.06½
Gilsowax	lb.	.04½	.05
Insulac	lb.	.06	.06½
Resin No. 1098 (drums)	lb.	—	.62
No. 1198	lb.	.4634	.4934

SOLVENTS

Acetone (dlvd.)	lb.	.07½	.09½
American Dipentine	gal.	.35	.36
American Pine Oil	gal.	.60	.61
Amsco Lactol Spirits (t.c.)	gal.	—	.16
Rubber Solvent (t.c.)	gal.	—	.15
Solv A (t.c.)	gal.	—	.20
Solv A-80 (t.c.)	gal.	—	.24
Solv B (t.c.)	gal.	—	.23½
Solv B-90 (t.c.)	gal.	—	.26½
Solv D (t.c.)	gal.	—	.25½
Solv F (t.c.)	gal.	—	.25½
Special Naphthalite (t.c.)	gal.	—	.15
Textile Spirits (t.c.)	gal.	—	.16
Amyl Chlorides, Mixed (l.c.l.) (drums)	lb.	—	.08
Aromatic Solvent 40	gal.	—	.199
Benzol 90%	gal.	.17	.24
Butyl Acetate (t.c.)	lb.	—	.175
Butyl Alcohol (t.c.)	lb.	—	.175
Secondary (dlvd.)	lb.	.09	.11
Tertiary (dlvd.)	lb.	.12	.14
Carbon Bisulfide, Tech	lb.	.05½	.08½
Carbon Tetrachloride	lb.	.08	.08½
Cosol 1	gal.	.30	.38
Cosol 2	gal.	.30	.38
Cyclohexane	lb.	.09¼	.11½
Cyclohexanone	lb.	.25	.27 *
Diacetone, Pure (dlvd.)	lb.	.12	.14

SOLVENTS (Cont'd)

Dichlorethyl Ether (dms.)	lb.	.165	.17
Formal (dms.)	lb.	.265	.27
Dichloropentane (l.c.l.)	lb.	.04	.05½
Dipentene 122 (dms.)	gal.	.35	.36
Ethyl Alcohol (t.c.)	gal.	—	.375
Ethyl Alcohol SD-1 (t.c.)	gal.	—	.43
Ethyl Alcohol SD-2B (t.c.)	gal.	—	.41½
Ethylene Dichloride (drums, dlvd.)	lb.	.08	.09½
Halowax Oil	lb.	.25	.37
Heptanes (t.c.)	gal.	—	.16
Hexalin Cyclohexanol	lb.	.20	.22 *
Hexanes (t.c.)	gal.	—	.16
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.35	.48
Ether, Ref. (dlvd.)	gal.	.04½	.06½
Mesityl Oxide (dlvd.)	lb.	.115	.135
Methanol (dms., dlvd.)	gal.	.43	.495
Methyl Acetone, Syn. (drums, dlvd.)	gal.	.615	.65
Methyl n-Amyl Ketone (drums)	lb.	.37	.39
Methyl Ethyl Ketone	lb.	.09	.11
Methyl Isobutyl Ketone (dlvd.)	lb.	.11	.13
N-5 Pentane Mix. (t.c.)	gal.	—	.11½
N-6 Hexanes (t.c.)	gal.	—	.14
N-7 Hexanes (t.c.)	gal.	—	.13
Petrolene (t.c.)	gal.	—	.10½
Picolines, Aplha, Refined	lb.	.75	1.00
Mixed	lb.	—	.45
Proprietary Alcohol (t.c.)	gal.	—	.43½
Pyridine, Refined	lb.	.80	.89
Quinoline	lb.	.50	.60
Rubber Solvent (t.c.)	gal.	—	.15
Rubsol (t.c.)	gal.	—	.08625
Skellysolve B (Hexanes) (t.c.)	gal.	—	.141
C (Heptanes) (t.c.)	gal.	—	.133
E (Octanes) (t.c.)	gal.	—	.155
R (Solvent Naphtha)	gal.	—	.109
Solvenol (dms.)	gal.	—	.36
Solvent, Crude, Light	gal.	.19	.28
Solvesso 100 (t.c.)	gal.	—	.27
150 (t.c.)	gal.	—	.27
Sunny South Dipentene	gal.	.35	.36
Sunny South Pine Oil	gal.	.60	.61
Toluene (drums)	gal.	—	.28
Toluol (t.c.)	gal.	—	.30
Trichlorethane	lb.	.11	.12
Triglycol Dichloride (dms.)	lb.	.519	.59
Tromex	lb.	.078	.083
Union Thinner 1	gal.	—	.149
3	gal.	—	.149
7	gal.	—	.139
2-50-W Hi-Flash	gal.	—	.15
X-7 Sp. Heptanes (t.c.)	gal.	—	.11
Xylene (drums)	gal.	—	.30

STABILIZING AGENTS (for Vinyl Resins)

Basic Silicate White Lead	lb.	.13¾	.14¾
BVS	lb.	—	.60
Cadmium Stearate	lb.	—	1.25
Dutch Boy DS-207	lb.	—	.50¾
Plumb-O-Sil A	lb.	—	.28
B	lb.	—	.29½
Tribase	lb.	—	.34¾
Dythal	lb.	—	.37½
Lead Stearate, Precip.	lb.	.36	.38
Fused	lb.	—	.35½
Lithium Stearate	lb.	.63	.65
Stabelan E	lb.	1.25	1.40
XL	lb.	.55	.60
Stabilizer V-7939	lb.	—	.60
Stabilizer JCX	lb.	.49	.51
SN	lb.	—	.42
V-1-N	lb.	.44	.50
V-9	lb.	—	.85
Vanstay	lb.	.33	.35

SUN CHECKING AGENTS

Antisol	lb.	.25	.26
Antisun	lb.	—	.23
Heliozone	lb.	.25	.26
Sharples Wax	lb.	.23	.28
Sunolite	lb.	.20	.23
Sunproof	lb.	.25	.26
Imp.	lb.	.23	.24
Jr.	lb.	.18	.19
Tonox	lb.	.50	.52

TACKIFIERS

Advaresin 100	lb.	.13½	.14
Agchem RC 30	gal.	.65	1.34
Amberol ST-137X	lb.	.30	.30½
Arcco 493-49B	lb.	.15	.17
700-25A	lb.	.14	.16
U2-24	lb.	.11	.13
Beckopol 1400 (dlvd.)	lb.	.25½	.26
Dutrex 44	gal.	—	.919
E-310 Resin Emulsion	lb.	—	.14
Galex (drums)	lb.	—	.15
Koresin	lb.	.73	.75
Liquid Rubber Flux	lb.	—	.125
Pentalyn A (dlvd.)	lb.	.13	.13½
Resin V	lb.	—	.23¼
Rubtack	lb.	—	.12
Staybelite Ester No. 10 (dlvd.)	lb.	.19	.19½
Super-Beckacite No. 1001 (dlvd.)	lb.	.34	.34½
Synthol	lb.	—	.20½
Vistac No. 1	gal.	—	1.32
No. 2	gal.	—	1.66
No. 4	gal.	—	1.80

THICKENERS (FOR LATEX)

Acrysol GS	lb.	.13	.18½
Alcogum A-5	lb.	.10	.12
Betanol (drums)	lb.	—	.70
Emulsorex No. 5	lb.	—	.35
Lecithin	lb.	.12	.17
Polyco 296	lb.	.13	.15
Propylene Laurate (dms.)	lb.		.36
Sodium Silicate	cwt.	1.10	2.00

VULCANIZING AGENTS

Selenium

Ancasal*	lb.	—	2.00
Vandex	lb.	—	2.00

Sulfur

Blackbird	cwt.	—	2.30
Crystex	lb.	.19½	.23
Darex Dispersed Sulphur	lb.	.12	.17
Dispersed Sulfur	lb.	.12	.17
Devil (c.l.)	cwt.	—	1.75
Insoluble Sulfur 60	lb.	.13	.13½
Spider	cwt.	—	2.30
Star (c.l.)	cwt.	—	2.25
Tire (c.l.)	cwt.	—	1.75
Tube (c.l., dlvd.)	cwt.	—	2.25

Tellurium

Ancatel*	lb.	—	2.00
Latex Telloy	lb.	—	2.00
Telloy	lb	—	2.00

Miscellaneous Vulcanizing Agents

VA-3	lb.	.55	.65

WASHING & FINISHING AGENTS

Apcolene (t.c.)	gal.	—	.09½

WETTING AGENTS

Advawet No. 10	lb.	—	.35
No. 15	lb.	—	.18
No. 33	lb.	.40	.43
Aerosol OT 70% Clear	lb.	.80	1.00
Agchem SA-15 (16, 18)	lb.	.17	.29
Alrosol (dms.)	gal.	—	.48
Aquarex D	lb.	—	.76
MDL Paste	lb.	—	.30
ME	lb.	—	.92
NS	lb.	—	.60
WA Paste	lb.	—	.25
Areskap 50	lb.	.30	.38
Dry 100	lb.	.60	.72
Aresket 240	lb.	.30	.38
Dry 300	lb.	.60	.72
Aresklene 375	lb.	.42	.57
Dry 400	lb.	.70	.84
Armacs	lb.	.29	.76
Arquads	lb.	.24	.27
Etho-chemicals	lb.	.34	.80
Lecithin	lb.	.12	.17
Parnol	lb.	.13	.18
Santomerse D	lb.	.43	.65
S	lb.	.12	.25
Sorbit P	lb.	—	.28
Stablex G	lb.	—	.70
Trenamine W-50	lb.	.20	.22
Triton K-60	lb.	.33½	.41
R-100	lb.	.13½	.24
X-100	lb.	.37	.44½
X-200	lb.	.30½	.38
770	lb.	.19½	.27
Vultamol	lb.	—	.17½
Wetsit Conc.	lb.	.25	.32

MISCELLANEOUS CHEMICALS

Acto 450 (550-W, 600, 630)	lb.	.109	.145
Agchem SA-17	lb.	—	.29
Aquarex SMO	lb.	—	.50
A.S.T.M. Oil No. 1 (and No. 3)	gal.	1.00	1.15
Copper Inhibitor X-872-L	lb.	—	1.95
2-Ethylhexanol (dms.)	lb.	.25	.26
Glycerine, 88% Sap., Crude (dlvd.)	lb.	.20½	.21
MODX	lb.	.295	.345
NBC	lb.	—	1.50
Para Resin No. 2457 (c.l.)	lb.	—	.04
No. 2718 (c.l.)	lb.	—	.04
Pigmented Filmite	lb.	—	.16½
Polyvinyl Methyl Ether	lb.	—	1.00
Reference Fluid SR-6	gal.	.85	1.00
SR-10	gal.	.60	.75
Resin No. 1226	lb.	.31½	.36½
Rio Resin	lb.	.50	.52
Santocel		—	.50
Sherospe L, N, F-445 and P	lb.	.12½	.15
Sublac	lb.	.30	.32
Synpep N (drums)	lb.	—	.54
Thiokol LP-2	lb.	—	.90
LP-3	lb.	—	.90
Tysonite	lb.	.21½	.22¼
Vanfre	lb.	2.00	2.50
Vinsol Resin—Lumps	cwt.	—	3.25

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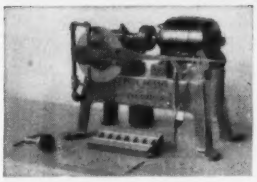

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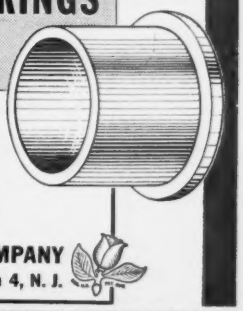

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